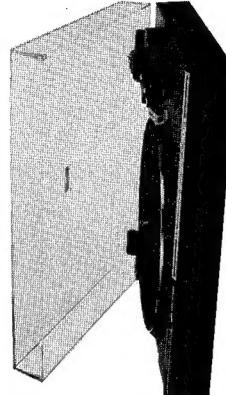


PIONEER®

Service Manual

**CIRCUIT & MECHANISM
DESCRIPTIONS
REPAIR & ADJUSTMENTS**



STEREO TURNTABLE

PL-450 PL-405

MODEL PL-450 COMES IN FIVE VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Voltage	Remarks
KU	AC 120V only	U.S.A. model
KC	AC 120V only	Canada model
WEM	AC 220-240V	European continent model
WB	AC 220-240V	United Kingdom model
R	AC 110-120, 220-240V (switchable)	General export model

MODEL PL-405 COMES IN FOUR VERSIONS DISTINGUISHED AS FOLLOWS:

Type	Voltage	Remarks
WB	AC 220-240V	United Kingdom model
R	AC 110-120, 220-240V (switchable)	General export model
KU	AC 120V only	U.S.A. model
KC	AC 120V only	Canada model

- This service manual is applicable to the PL-450/KU type.
- Both model PL-450 and PL-405 have the same basic mechanism and performance. The only difference is in appearance.
- For servicing of the PL-450/KC, WEM, WB, R and PL-405/R, WB, KU, KC types, please see 21 ~ 30 page.
- Ce manuel d'instruction se réfère au mode de réglage en français.
- Este manual de servicio trata del método de ajuste escrito en español.

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1. SPECIFICATIONS

Motor and Turntable

Drive System	Belt-drive
Motor	DC motor
Turntable Platter	280 mm diam. aluminum alloy die-cast
Speeds	33-1/3 and 45 rpm
Wow and Flutter	Less than 0.05% (WWRMS)
±0.07% WTD Peak (DIN)	
Signal-to-Noise Ratio	More than 68 dB (DIN-B) (with Pioneer cartridge model PC-250T)

Tonearm

Type	Static-balance type, Straight pipe arm	
Effective Arm Length	221 mm Overhang	15.5 mm

Subfunctions

Auto-return, Quick play, Quick stop, Arm elevation, Free stop hinges

Miscellaneous

Power Requirements	1
WEM, WB, WP models	AC 220 — 240 V, 50, 60 Hz
KU, KC models	AC 120 V, 60 Hz
R, R/G models	110 — 120 V/220 — 240 V (switchable), 50, 60 Hz

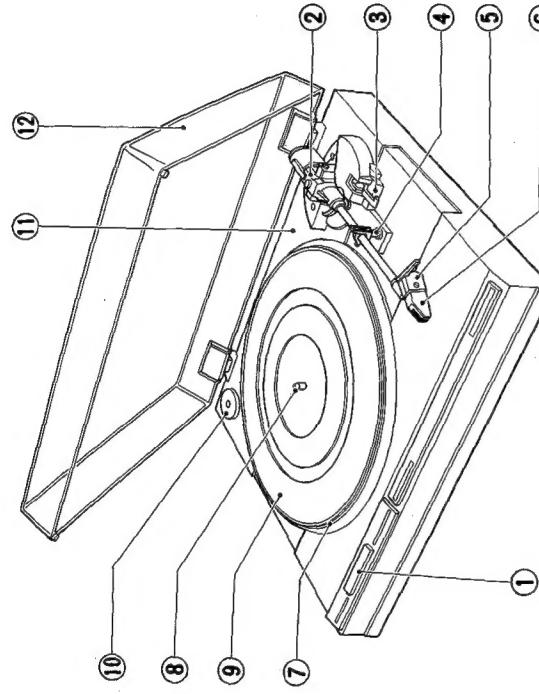
NOTE:

Specifications and design subject to possible modification without notice, due to improvements.

Accessories

EP Adapter	1
Operating Instructions	1

2. PANEL FACILITIES



① SPEED SWITCH

Set this switch in accordance with the speed of the record which is to be played.

[33] (released position): For 33-1/3 rpm records.

[45] (depressed position): For 45 rpm records.

② TONEARM

③ ARM ELEVATION LEVER

- Use the lever for record play.
- Use the lever to suspend record play temporarily.
- Use the lever when changing the tracks during actual play.

Lever in "UP" position:

The tonearm rises up, lifting the stylus off the record.

Lever in "DOWN" position:

The tonearm descends, lowering the stylus onto the record.

④ ARM REST

This serves to hold and clamp the tonearm. When moving the tonearm, release the clamp.

⑤ HEADSHELL

⑥ CARTRIDGE (PC-250T)

⑦ PLATTER

⑧ PLATTER SHAFT

⑨ RUBBER MAT

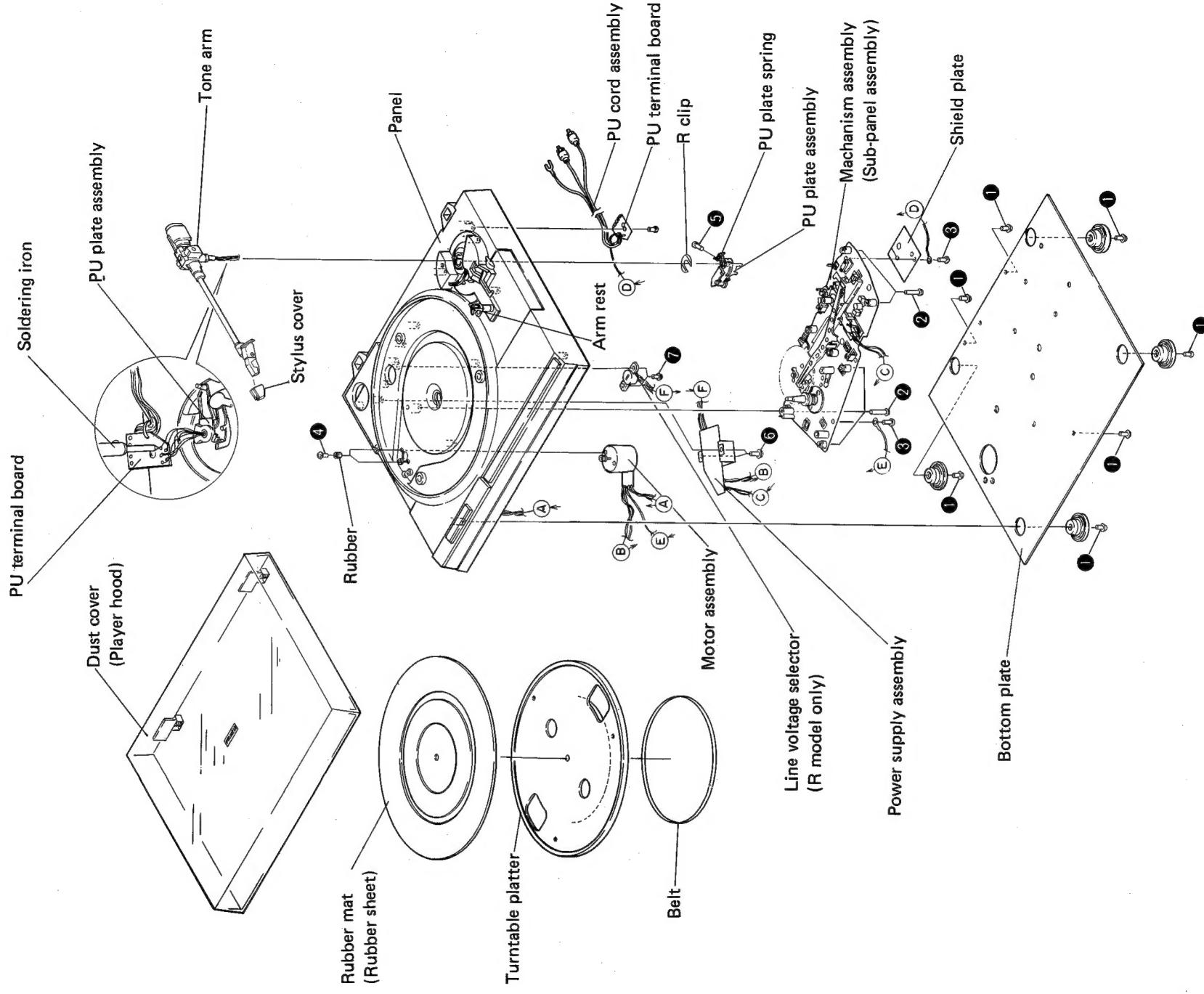
⑩ EP ADAPTER

This is used when playing records without a "large center hole".

⑪ CABINET

⑫ DUST COVER

3. DISASSEMBLY



- **Mechanism Ass'y and Motor**
 1. Turn on the turntable and free the mechanism.
 2. Fasten the tone arm to the arm rest.
 3. Remove the rubber sheet and turntable platter.
 4. Close the player hood and turn the player upside down and place it on a soft cloth so that the player hood is not damaged.
 5. Remove the seven screws ①, and remove the bottom plate.
 6. Remove five screws ② and two screws ③.
 7. Disconnect lead wire ④.

The mechanism ass'y can be removed from the panel.

 8. Using a soldering iron, disconnect the lead wires ⑤ from the motor.
Disconnect lead wire ⑥.
Remove the two screws ⑦, and remove the motor.

See pages 14 ~ 16 for the parts installation and assembly precautions.

- **Tone Arm**

1. Remove the mechanism ass'y from the panel.
2. Using a soldering iron, disconnect the PU lead wires (arm lead wires) from the PU terminal board.
3. Remove the one screw ⑧, and remove the PU plate ass'y from the tone arm.
4. Remove the R clip.
5. Turn the player onto its side, remove the arm reset clamp, and remove the tone arm from the panel.

- **Power Supply Ass'y**

Remove the two screw ⑨.
(Remove the two screw ⑩ (only R model))

4. EXPLODED VIEWS

4.1 EXTERIOR

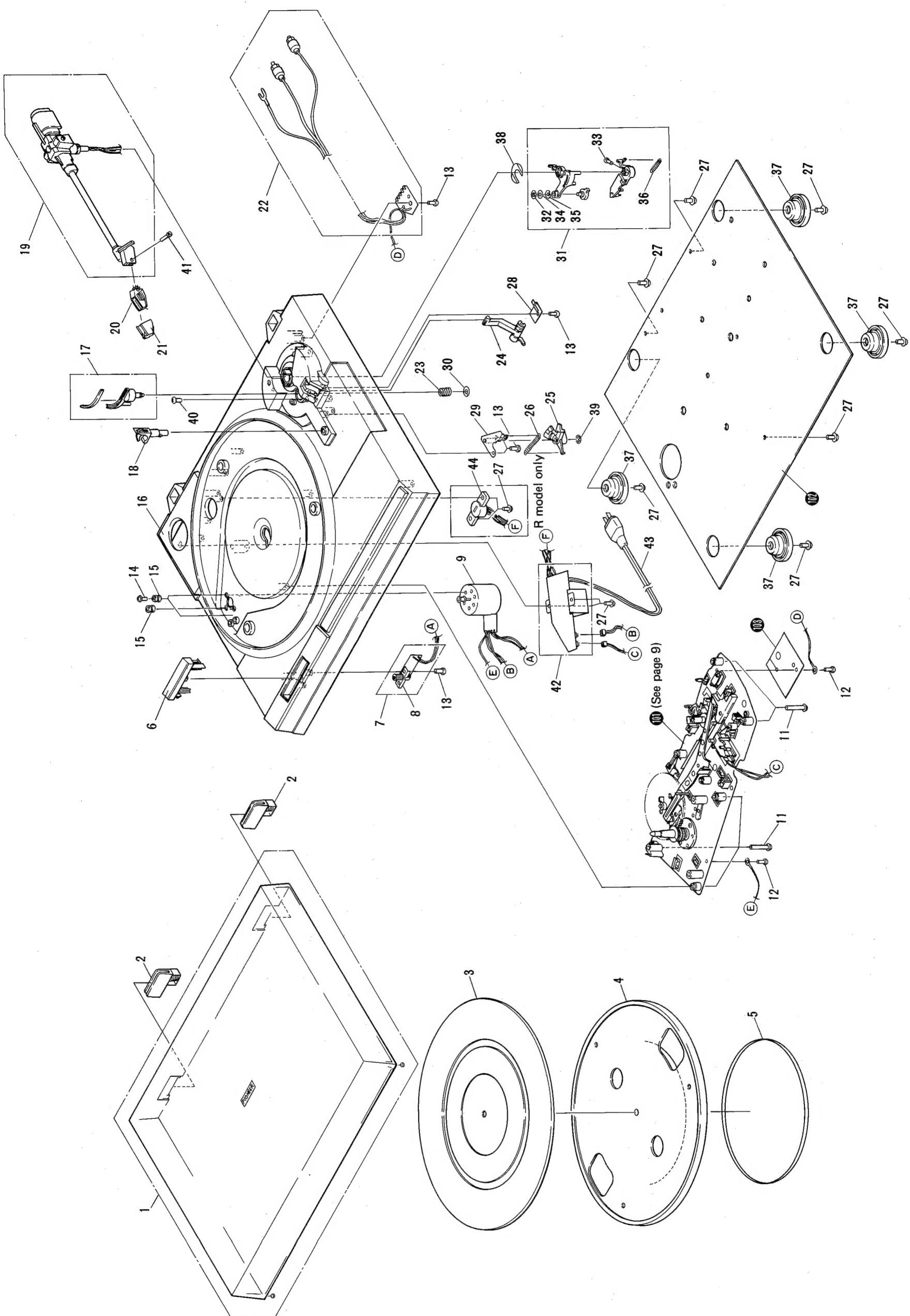
Parts List

NOTES:

- Parts without part number cannot be supplied.
- The \triangle mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★
- ★★ GENERALLY MOVES FASTER THAN ★
- This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

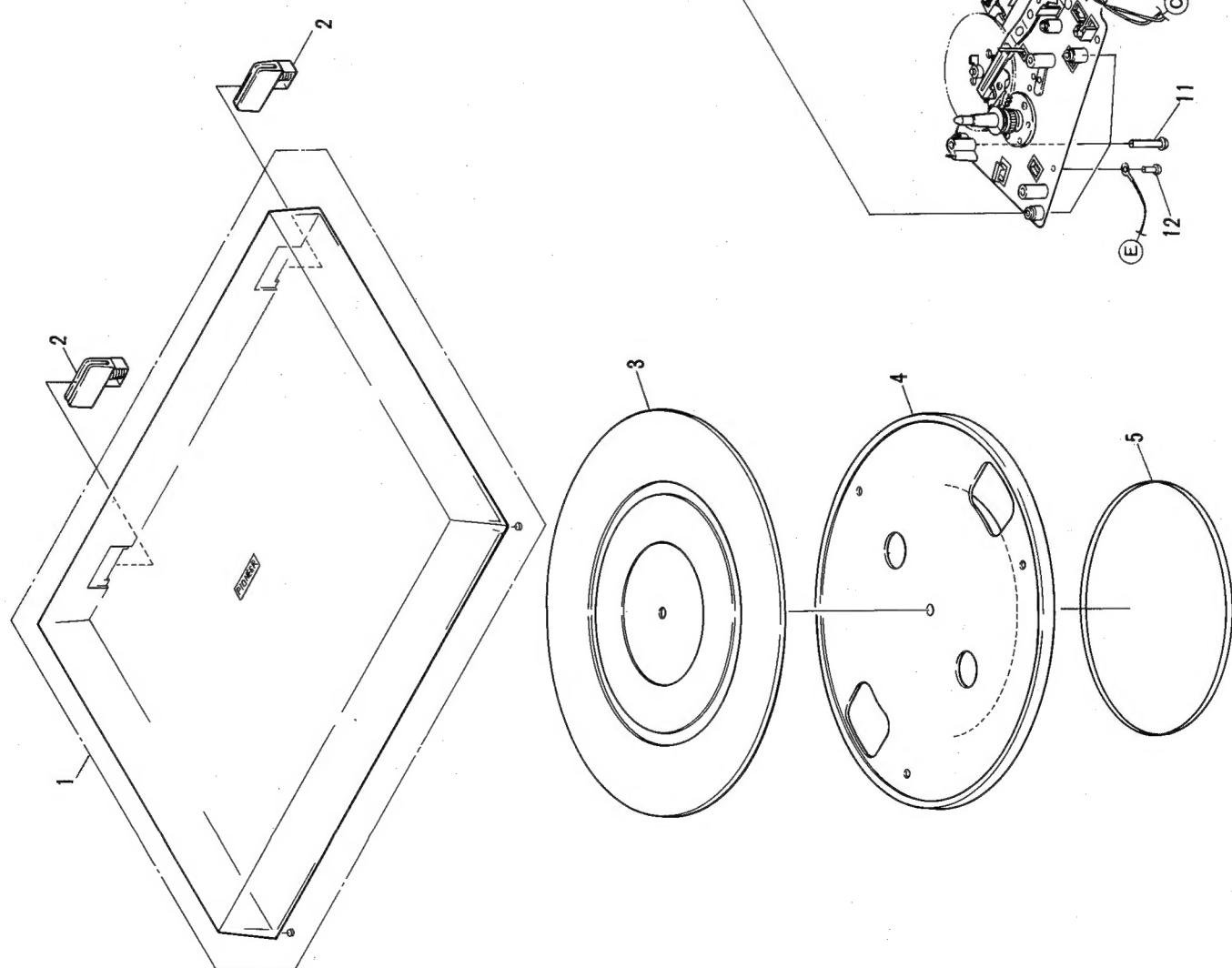
Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
	1.	PNV-034	Dust cover		26.	PBH-238	Elevation cam spring
	2.	PXB-378	Hinge assembly		27.	IPZ30P100FMC	Screw 3 × 10
	3.	PEA-061	Rubber mat assembly		28.	PBK-053	EV plate spring (A)
	4.	PNR-192	Turntable platter		29.	PXT-462	EV plate spring (B) unit
★	5.	PEB-224	Belt		30.	PBF-020	Washer
	6.	PAD-147	SP button unit		31.	PBX-375	PU plate (B) assembly
	7.	XWS-022	Speed selector assembly		32.	YS40FBT	Washer
★★	8.	PSG-049	Push switch (S2)		33.	PMD40P080FMC	Screw 4 × 8
★	9.	PYY-163	Motor assembly		34.	WC40FMC	Washer
	10.		.....		35.	PNC-227	PU spring washer
	11.	IPZ30P290FMC	Screw 3 × 29		36.	PBH-308	PU plate spring
	12.	PDZ30P060FMC	Screw 3 × 6		37.	PEB-251	Insulator
	13.	PPZ30P080FMC	Screw 3 × 8		38.	PBK-059	R clip
	14.	PBA-112	Screw		39.	YE30S	Retaining ring (T type E)
	15.	PEB-172	Motor rubber		40.	BZ226P120FZK	Screw 2.6 × 12
	16.	PNY-151	Panel		41.	PBA-170	Screw
	17.	PXB-374	EV sheet assembly	\triangle	42.	XWR-047	Power supply assembly
	18.	PXB-373	Arm rest assembly	\triangle	43.	PDG-023	AC power cord
	19.	PPD-658	Tonearm assembly	\triangle ★	44.	PSB-011	Line voltage selector (R model only)
	20.	PXV-952	Cartridge (without stylus)				
	21.	PNX-972	Stylus cover	\triangle	101.		Sub-panel assembly
	22.	PXB-345	PU cord assembly		102.		Bottom plate
	23.	PBH-293	EV spring		103.		Shield plate
	24.	PNX-344	EV cam lever				
	25.	PNX-339	Elevation cam				

A



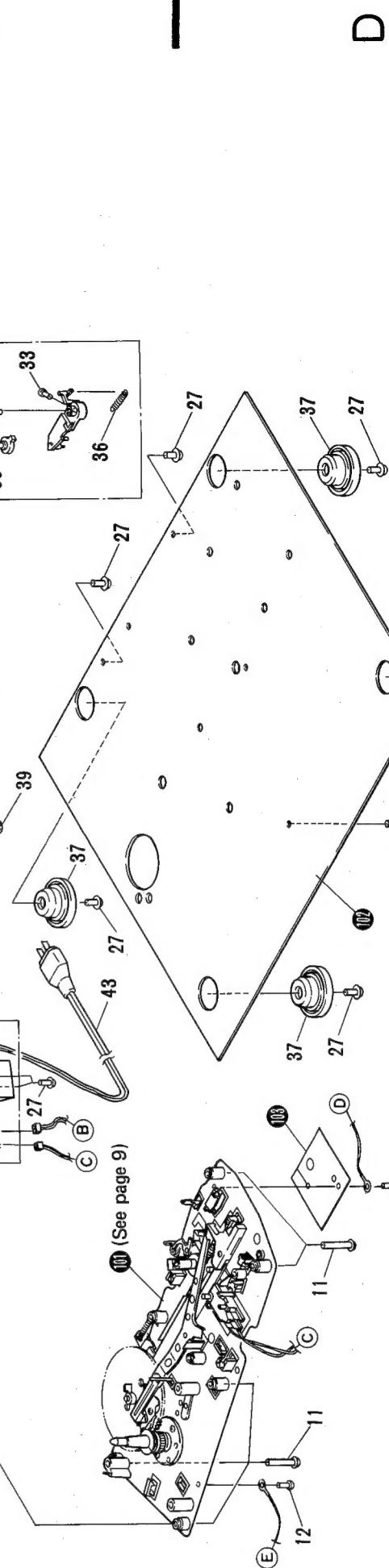
B

B



C

C



D

D

E

1

4

3

2

6

6

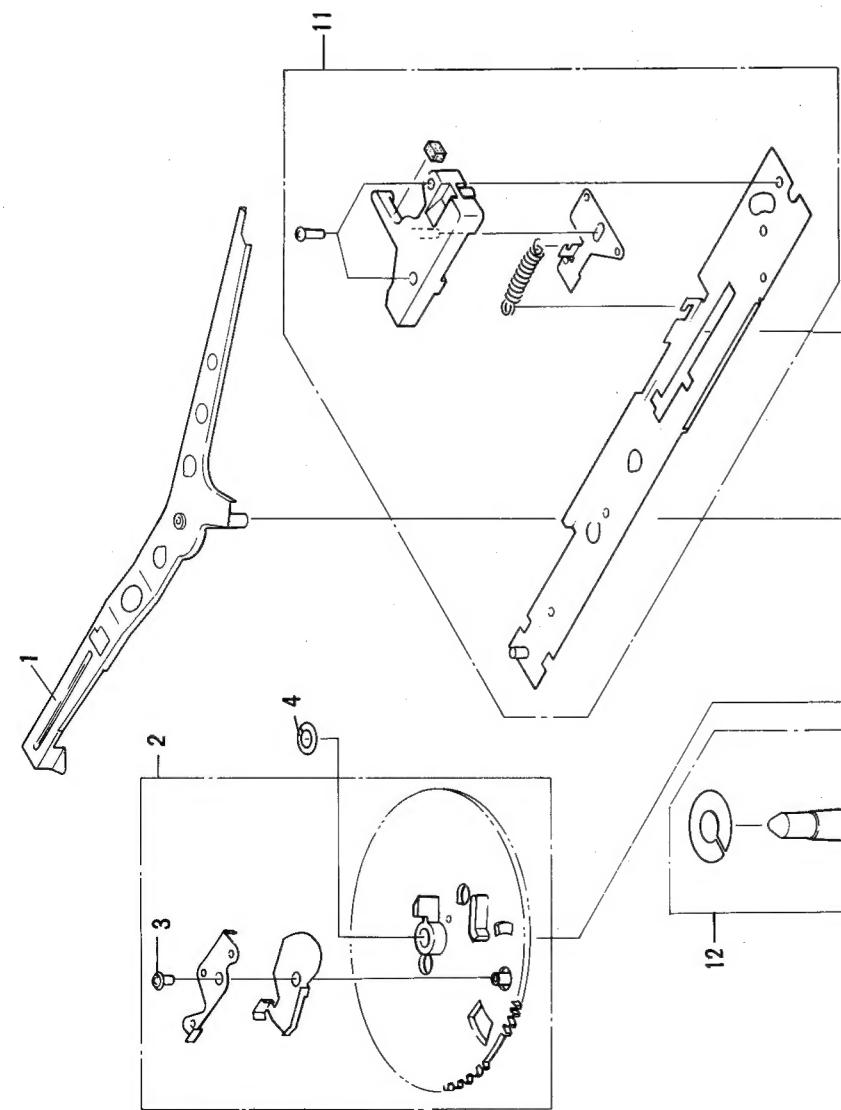
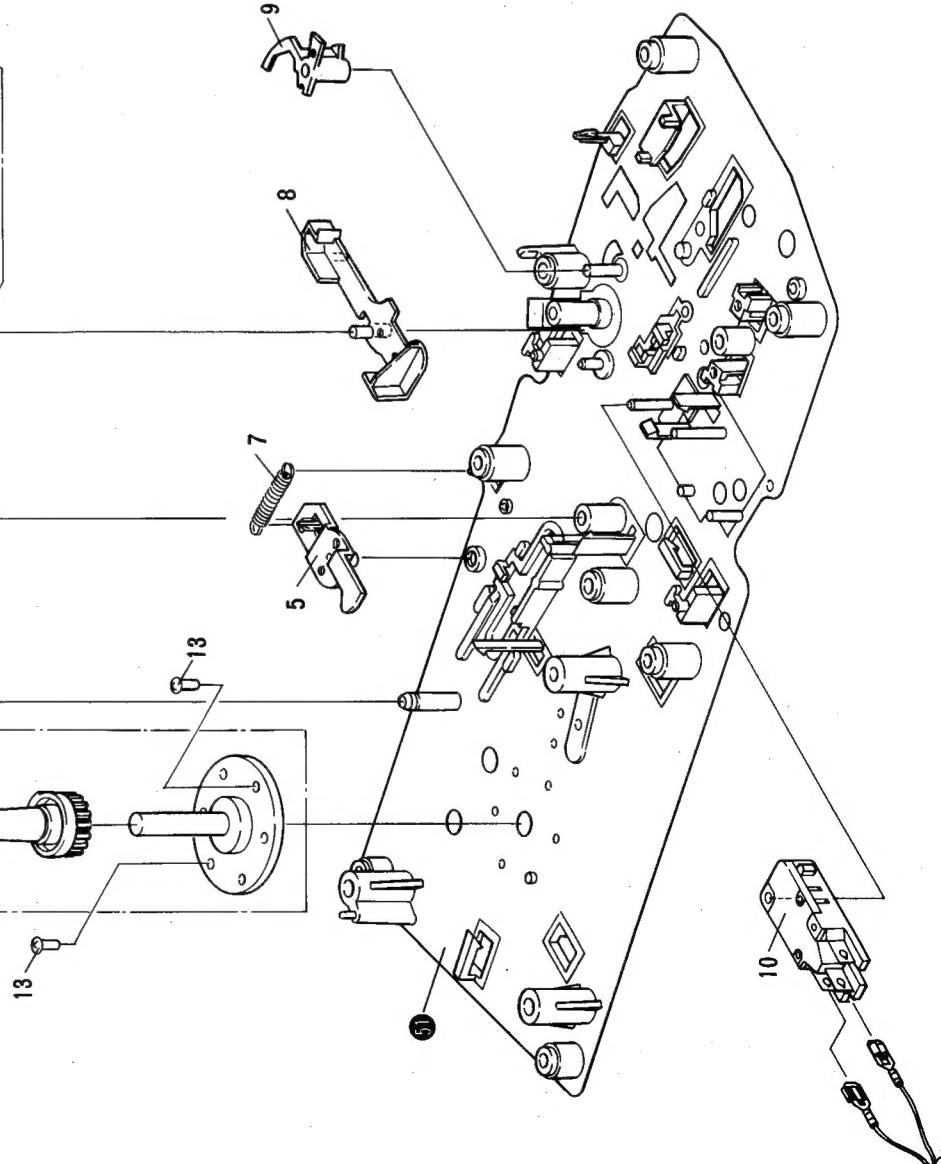
5

4

3

2

1

**A****B****C****D****A**

5. ELECTRICAL PARTS LIST

NOTES:

- When ordering resistors, first convert resistance values into code form as shown in the following examples.
Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).
560Ω 56 × 10¹ RD%PS [5][6][1] J
47kΩ 47 × 10³ RD%PS [4][7][3] J
0.5Ω 0R5 RN2H [0][5] K
1Ω 010 RS1P [0][1] K
- Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).
5.62kΩ 562 × 10¹ 5621 ... RN%SR [5][6][2] F
- The △ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
- For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.
- ★★ GENERALLY MOVES FASTER THAN ★
This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

Parts List

Mark	No.	Part No.	Description	Mark	No.	Part No.	Description
1.	PXT-446	Detector lever unit	△ ★	10.	PSF-023	Microswitch (S1)	
2.	PYY-164	Cam assembly		11.	PXB-232	Driving plate assembly	
3.	PBA-126	Screw 2.6 x 8		12.	PXB-379	Shaft assembly	
4.	PBF-018	Washer		13.	PDZ30P080FMC	Screw 3 x 8	
5.	PNY-139	Lock plate					Sub-panel unit
6.	PBH-225	Lock plate spring		51.			
7.	PNX-030	Switch lever					
8.	PNY-141	Switch locker					

5. ELECTRICAL PARTS LIST

- When ordering resistors, first convert resistance values into code form as shown in the following examples.

Ex. 1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).

560Ω 56 × 10¹ RD%PS [5][6][1] J

47kΩ 47 × 10³ RD%PS [4][7][3] J

0.5Ω 0R5 RN2H [0][5] K

1Ω 010 RS1P [0][1] K

Ex. 2 When there are 3 effective digits (such as in high precision metal film resistors).

5.62kΩ 562 × 10¹ 5621 ... RN%SR [5][6][2] F

The △ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

- For your Parts Stock Control, the fast moving items are indicated with the marks ★★ and ★.
- ★★ GENERALLY MOVES FASTER THAN ★
This classification shall be adjusted by each distributor because it depends on model number, temperature, humidity, etc.

Miscellaneous Parts

P.C. BOARD ASSEMBLIES	Mark	Symbol & Description	Part No.	Mark	Symbol & Description	Part No.
	△		XWR-047	△ ★	Power transformer (120V)	PTT-167

SWITCH	Mark	Symbol & Description	Part No.	Mark	Symbol & Description	Part No.
	△			★	Speed Selector Assembly (XWR-022)	

POWER SUPPLY ASSEMBLY (XWR-047)	Mark	Symbol & Description	Part No.
	★ D1		PCX-010 (S1RBA10)

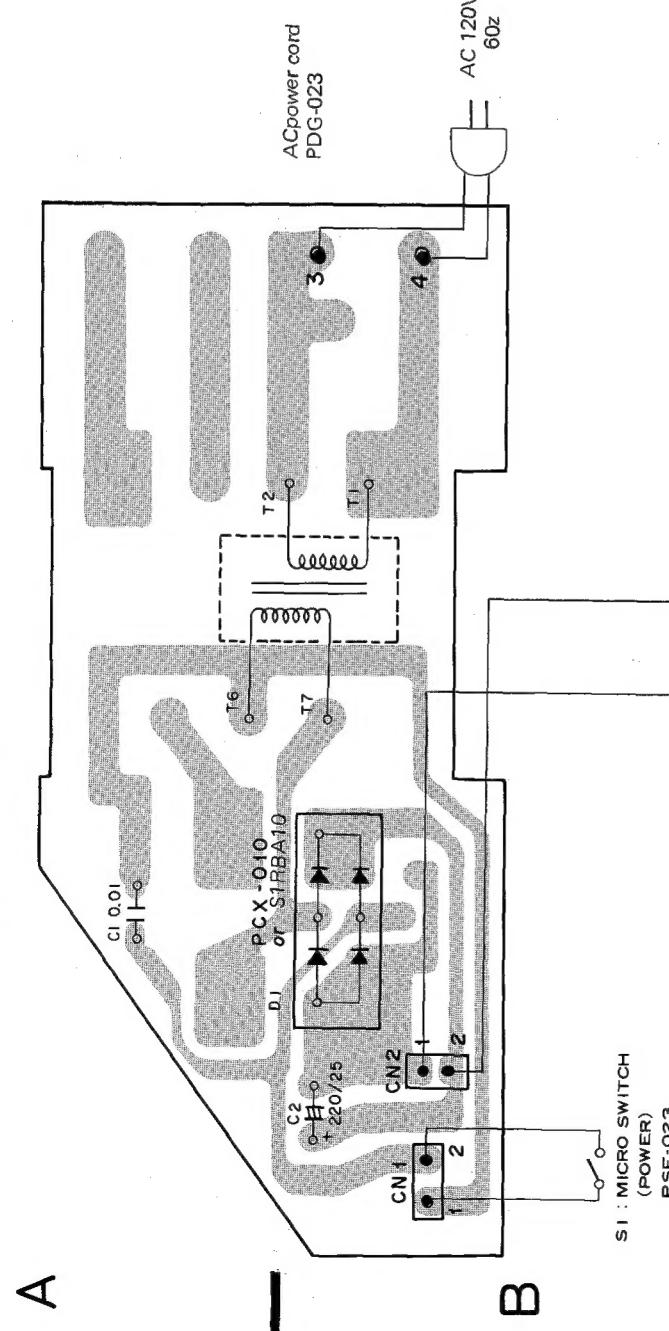
SEMICONDUCTORS	Mark	Symbol & Description	Part No.
	★ S2	Push switch	PSG-049

CAPACITORS	Mark	Symbol & Description	Part No.
	C1		CKDYF 103Z50
	C2		CEA 221M 25L

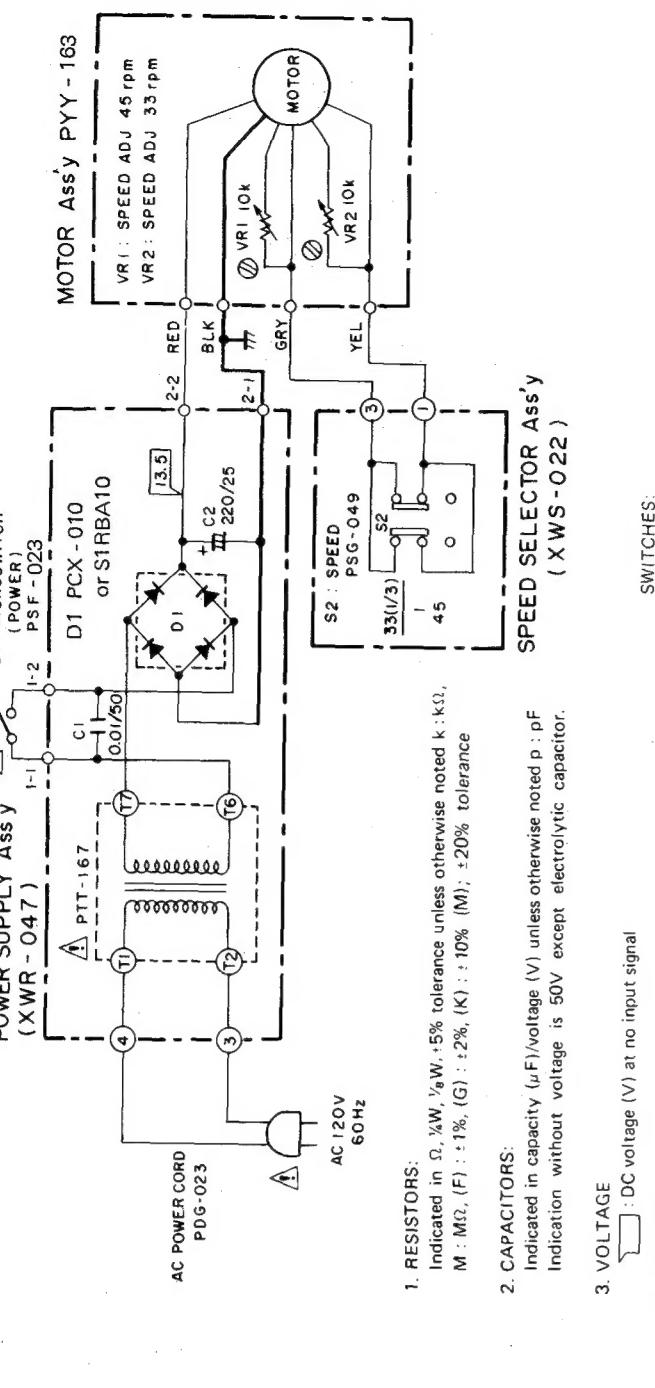
6. P.C. BOARDS CONNECTION DIAGRAM

7. SCHEMATIC DIAGRAM

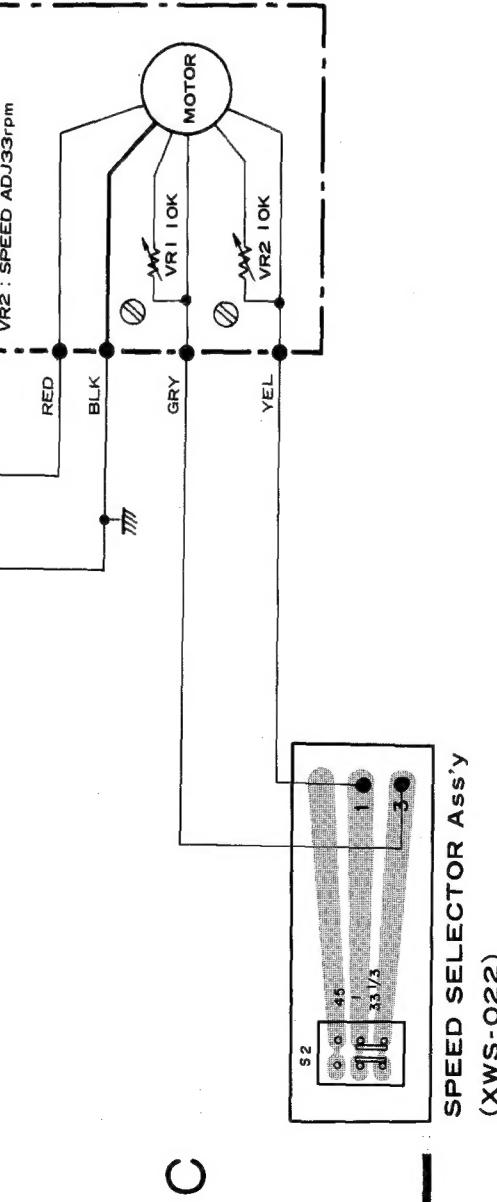
POWER SUPPLY Ass'y (XWR-047)



POWER SUPPLY Ass'y (XWR-047)



MOTOR Ass'y PYY-163

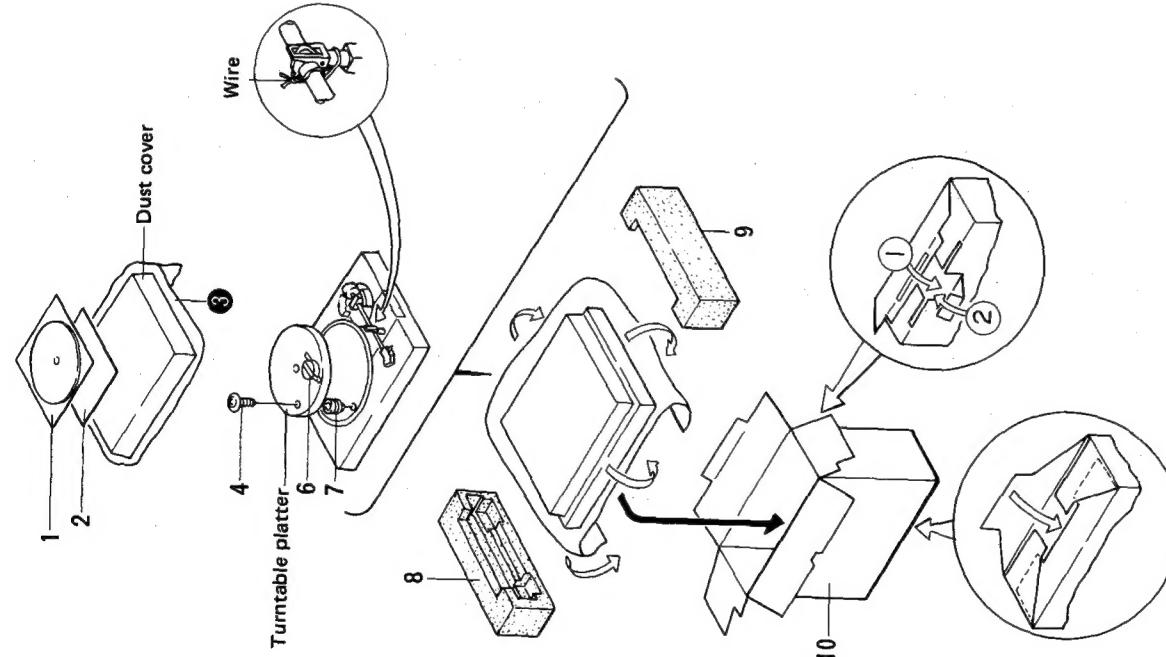


SPEED SELECTOR Ass'y (XWS-022)

8. PACKING

Parts List

Mark	No.	Part No.	Description
1.	PEA-061	Rubber mat assembly	
2.	PRB-256	Operating instructions (English)	
3.	PBA-144	Sheet	
4.	.....	Clamp screw	
5.	.....	.....
6.	N93-603	45 adapter	
7.	PNX-294	Platter cushion	
8.	PHA-175	Protector (L)	
9.	PHA-176	Protector (R)	
10.	PHH-123	Packing case	



9. PRECAUTIONS FOR REASSEMBLY

Follow these directions and precautions when reassembling a unit after completing repairs. Be sure to lubricate as required, make no mistakes when attaching parts, and avoid all other careless mistakes that may be the cause of trouble later on.

9.1 AREAS THAT REQUIRE LUBRICATION

NOTE:

Types of lubricants and areas where they are used are listed in table 1.

Table 1

Type of Oil	Areas used
Silicon Oil #50000	raising shaft
GYA-008	all other areas

Lubrication points are specified for greases other than GYA-008. Never use a different type of greases.

• Cam Section

Apply grease to the heart-shaped grooved section (rear side of the cam) and lock plate sliding section in order to minimize wear on the sliding section and the burden on the mechanism.

• Driving Plate Assembly

Decrease the burden on the mechanism and the wear on the sliding section.

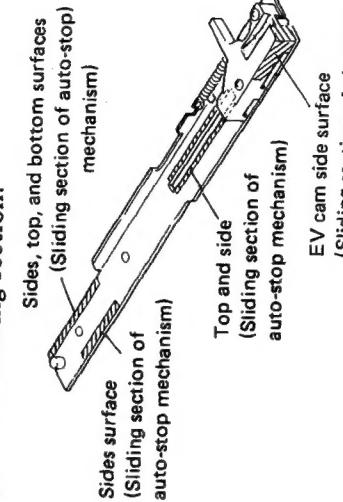


Fig. 9-1 Driving panel assembly section Switch Locker Section

• Switch Locker Section

Apply grease to the switch locker (opening) and sub-panel base sliding section to decrease the burden on the mechanism. When applying grease to the opening (shaft hole), do not apply any grease 2–3mm from the bottom surface. If grease is applied 2–3mm within the bottom surface, it may come out the bottom and go between the switch lever and sub-panel base causing the switch lever to operate ineffectively.

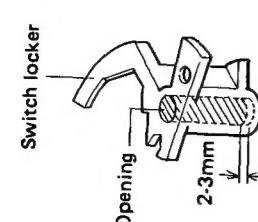


Fig. 9-2 Switch locker section

• EV Sheet Section

Apply oil to the raising shaft and sliding section of the bearing to assure stability in the elevation lowering speed.

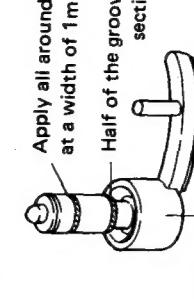


Fig. 9-3 EV sheet section

• EV Cam Lever Section

Apply grease to the sliding section of EV plate spring (A) and EV lever unit to decrease the burden on the mechanism.

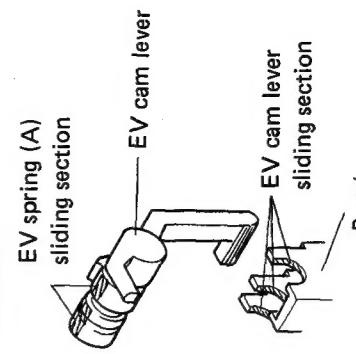


Fig. 9-4 EV cam lever section

- Elevation Cam Section**
Apply grease to the elevation cam and sliding section of the raising shaft to decrease the burden when operated.

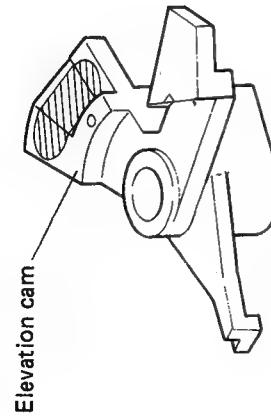


Fig. 9-5 Elevation cam section

9.2 PRECAUTIONS FOR ATTACHMENT OF PARTS AND REASSEMBLY

- Cam Assembly Attachment**

The cam assembly is attached by letting the lock plate go in the direction **(A)** as shown in Fig. 9-6.

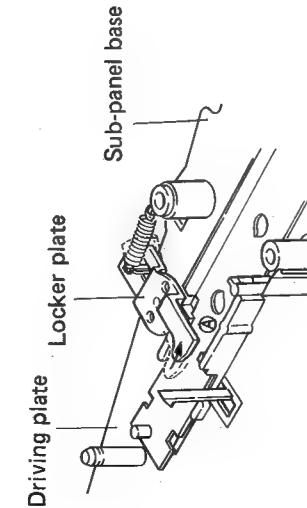


Fig. 9-6 Cam assembly attachment

- Arm Base Attachment**
When attaching the arm base section to the mechanism section, put the mechanism section switch locker and switch lever in the locked position and verify that the tonearm is in the arm rest location. Also check that the PU plate shaft is in the position shown in Fig. 9-7.

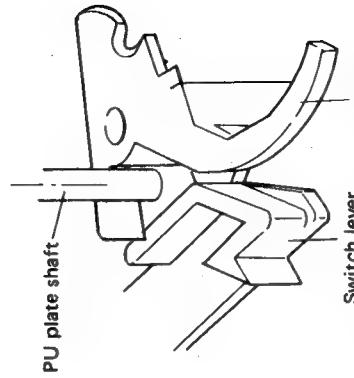


Fig. 9-7 Arm base attachment

- PU Plate Assembly Attachment**

The PU plate assembly is attached by pushing the PU plate bearing section against the arm rotating shaft fixing nut. The attachment direction is matched to the center of the support line as shown in Fig. 9-8 (tone arm position on the arm rest).

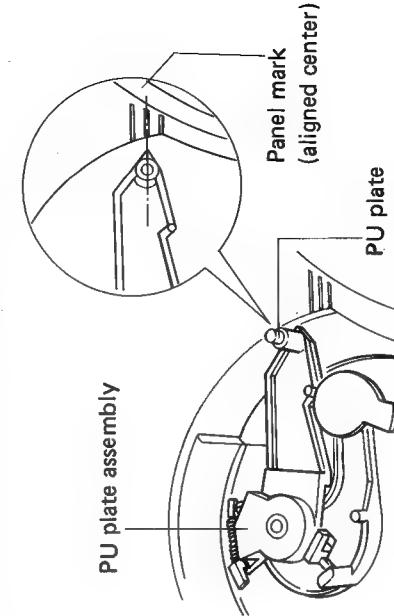


Fig. 9-8 PU plate attachment

- PU lead Wire Position Confirmation
When attaching the mechanism ass'y to the panel, be careful that the PU lead wire is not pinched at the panel boss as shown in Fig. 9-9.

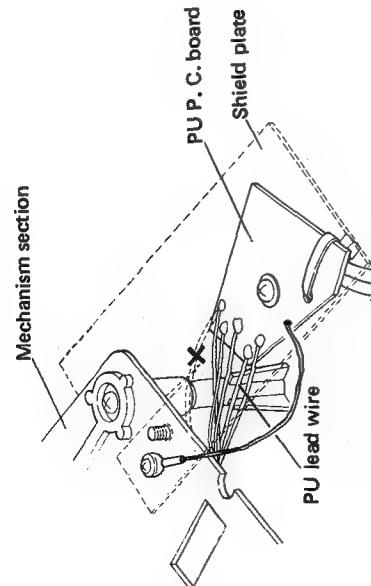


Fig. 9-9 PU lead wire attachment

- Installing The Cords
When installing the PU lead wire and DC power cord, install them to the panel with string as shown in Fig. 9-10.

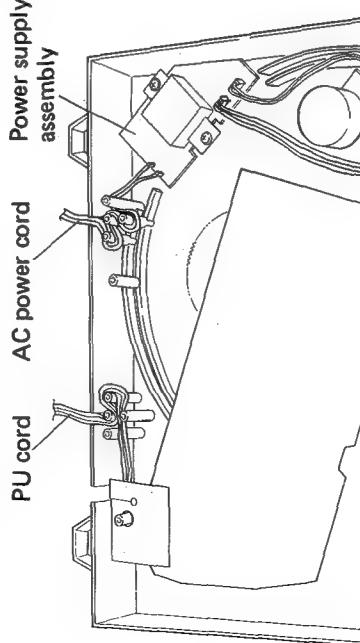


Fig. 9-10 Cords stringing

10. ADJUSTMENTS

10.1 AUTO-RETURN ADJUSTMENT

- Auto-Return Position Adjustment
When auto-return occurs too early or too late, make the following adjustments.
 1. Check the stylus landing position. If the stylus does not land at the correct position, adjust the landing position.
 2. Set the arm elevation switch to UP and turn the auto-return adjustment screw fully counter-clockwise.
 3. Move the tone arm as far as it will go toward the inside.
 4. When the auto-return adjustment screws is turned slowly clockwise, the tone arm will begin to move toward the inside.
 5. Stop turning the adjustment screw at the point at which there is a space of 32 mm between the cartridge stylus and the center shaft. (Fig. 10-1)
 6. After adjustment, check that auto-return is performed correctly and that the stylus landing position is correct.

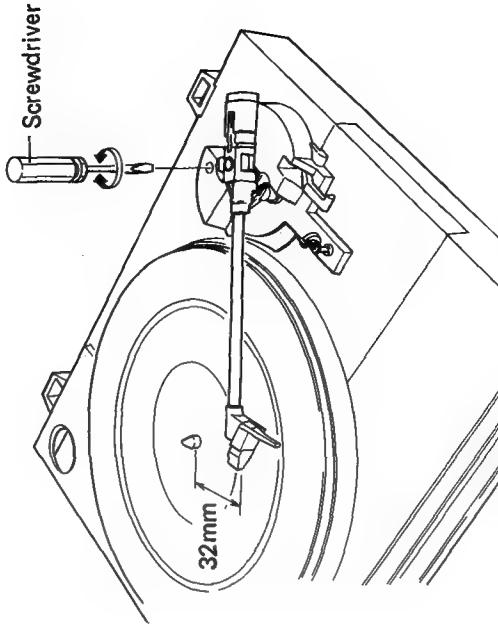
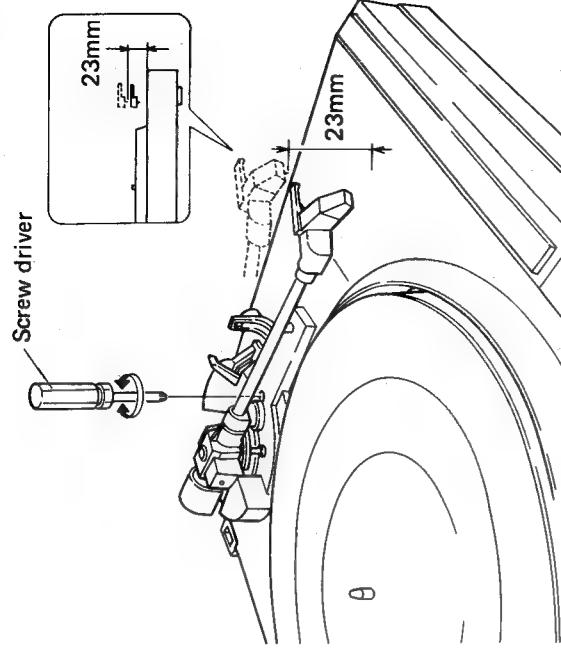


Fig. 10-1 Auto-return adjustment

10.2 ARM-ELEVATION ADJUSTMENT

● Arm Elevation Height Adjustment

1. Turn the arm elevation lever up to raise the tone arm.
2. Adjust the screw so that stylus is 23 mm above the panel. When the adjustment screw is turned counterclockwise, the stylus lowers.



10.3 MOTOR ADJUSTMENTS

Place the record player on blocks as shown in Fig. 10-3 and adjust the motor from the under base.

1. Turn the arm elevation lever up to raise the arm.
2. Place a strobo sheet on the turntable, move the arm to the turntable side, and rotate the turntable.
3. Adjust semifixed resistors VR1 and VR2 of the motor ass'y so the strobo of the strobo sheet appears to the static.
4. First adjust VR2 for 33 1/3 rpm and then adjust VR1 for 45 rpm.

Fig. 10-2 Arm-elevation adjustment

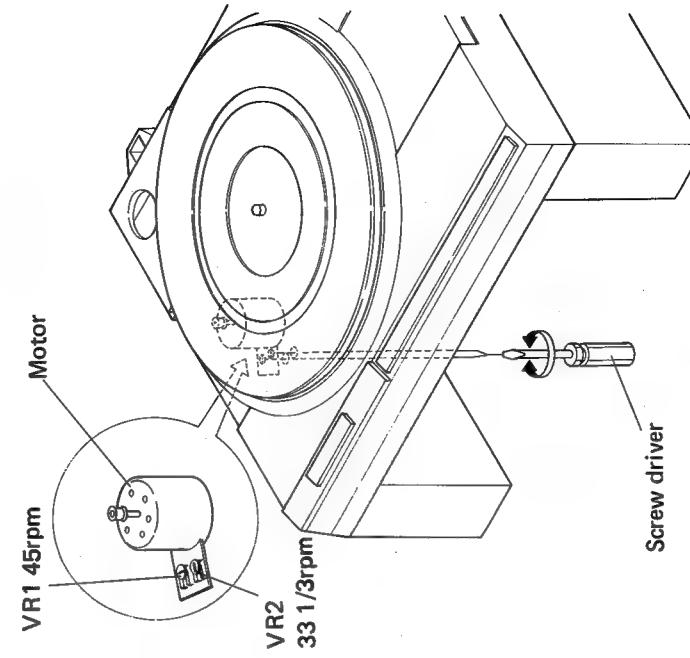


Fig. 10-3 Motor adjustment

10. RÉGLAGE

10.1 RÉGLAGE DE RETOUR AUTOMATIQUE

- Réglage de la position de retour automatique**

Réaliser les réglages suivants lorsque le retour automatique se produit tôt ou trop tard.

- Contrôler la position de descente de la pointe de lecture. Si la pointe de lecture ne descend pas sur la position correcte, ajuster la position de descente.

- Régler la touche de relevage du bras sur la position "UP" et tourner la vis de réglage du retour automatique à fond dans le sens contraire des aiguilles d'une montre.

- Déplacer le bras de lecture le plus possible vers l'intérieur.

- Lorsque la vis de réglage du retour automatique est tournée lentement dans le sens des aiguilles d'une montre, le bras de lecture commence à se déplacer vers l'intérieur.

- Arrêter de tourner la vis de réglage sur le point pour lequel il y a un écart de 32mm entre la pointe de lecture et l'axe central (Fig. 10-1)

- Après le réglage, vérifier que le retour automatique se réalise correctement et que la position de descente de la pointe est correcte.

10.2 RÉGLAGE DE RELEVAGE DU BRAS LECTURE

- Réglage de la hauteur de relevage du bras de lecture**

1. Tourner le levier de relevage du bras pour soulever le bras de lecture.

2. Régler la vis de sorte que la pointe de lecture se situe à 23 mm au-dessus du panneau. Lorsqu'on tourne la vis de réglage dans le sens contraire des aiguilles d'une montre, la pointe de lecture se baissera.

10.3 RÉGLAGE DU MOTEUR

Placer le tourne-disques sur des blocs, comme il est montré dans la Fig. 10-3 et régler le moteur depuis le dessous.

1. Tourner le levier de relevage du bras pour soulever le bras de lecture.

2. Placer une feuille stroboscopiques sur le tourne-disques; déplacer le bras jusqu'au côté du tourne-disques et le faire tourner.

3. Régler les résistances demi-fixes VR1 et VR2 de l'ensemble du moteur, jusqu'à ce que la feuille stroboscopique apparaît immobile.

4. D'abord régler VR2 pour avoir la vitesse de 33 1/3 tr/min, ensuite, régler VR1 pour 45 tr/min.

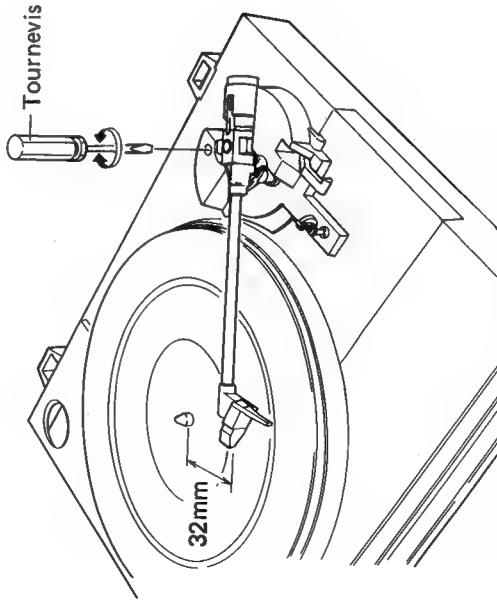


Fig. 10-1 Réglage de retour automatique

10. AJUSTE

10.1 AJUSTE DE RETORNO AUTOMÁTICO

- Ajuste de la posición de retorno automático**

Cuando el retorno automático se produce demasiado rápido o demasiado tarde, efectuar los ajustes siguientes.

1. Comprobar la posición de descenso de la aguja. Si la aguja no desciende en la posición correcta, ajustar la posición de descenso.
2. Ajustar el interruptor de elevación del brazo en la posición UP y girar el tornillo de ajuste de retorno automático completamente hacia la izquierda.
3. Desplazar el brazo fonocaptor hacia el interior al máximo.
4. Cuando se giren lentamente los tornillos de ajuste de retorno automático hacia la derecha, el brazo fonocaptor empleará a moverse hacia el interior.
5. Dejar de girar el tornillo de ajuste en el punto en el que haya un espacio de 32mm entre la aguja de la cápsula y el eje central. (Fig. 10-1)
6. Después del ajuste, comprobar que la operación de retorno automático se efectúe correctamente y que la posición de descenso de la aguja sea la correcta.

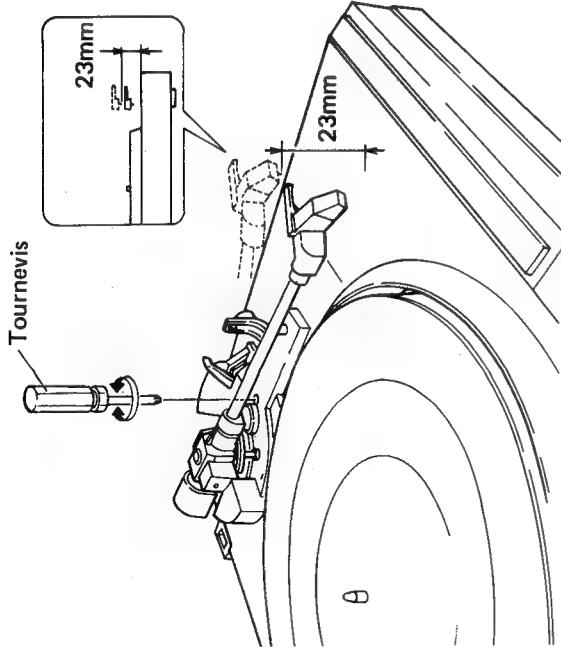


Fig. 10-2 Réglage de relevage du bras de lecture

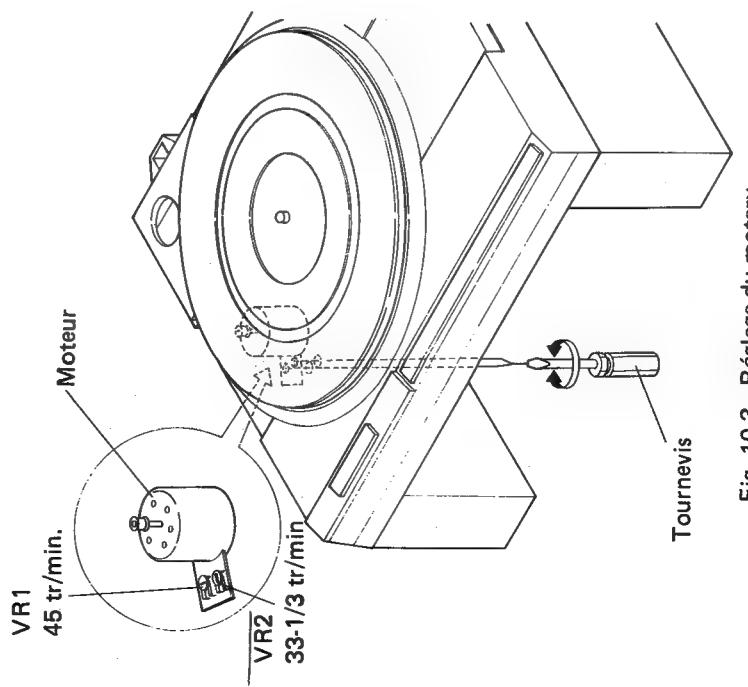


Fig. 10-3 Réglage du moteur

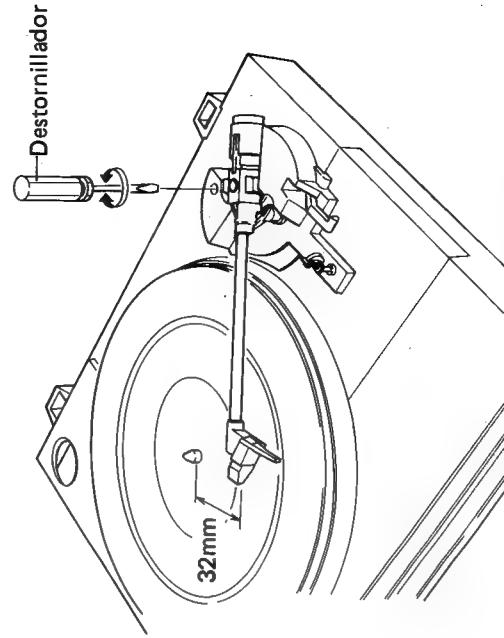
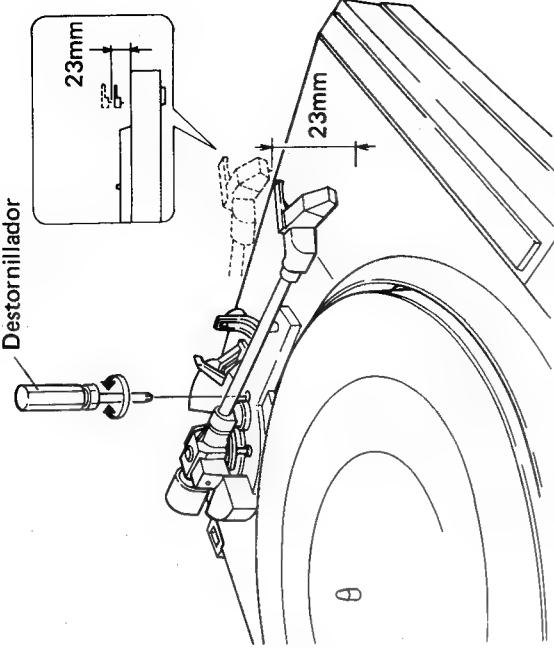


Fig. 10-1 Ajuste de retorno automático

10.2 AJUSTE DE LA ELEVACIÓN DEL BRAZO

● Ajuste de la altura de la elevación del brazo

1. Girar la palanca de elevación del brazo para elevar el brazo fonocaptor.
2. Ajustar el tornillo de modo que la aguja quede 23 mm por encima del panel. Al girar el tornillo de ajuste en el sentido contrario de las manecillas del reloj, se abaja la aguja.



1. Girar la palanca de elevación del brazo para elevar el brazo fonocaptor.
2. Poner una lámina estroboscópica sobre el plato, mover el brazo hacia el plato y hacer girar el plato.

3. Ajustar los resistores semífijos VR1 y VR2 del conjunto del motor de modo que el estrobo y la lámina estroboscópica parezcan parados.
4. Primero ajustar VR2 a 33 1/33 rpm luego VR1 a 45 rpm.

Fig. 10-2 Ajuste de la elevación del brazo

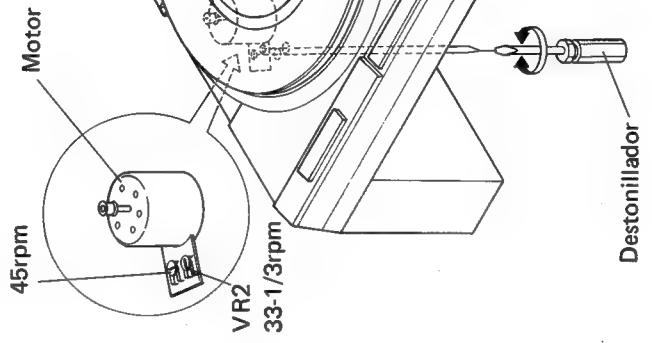


Fig. 10-3 Ajuste del motor

11. FOR PL-450/KC, R AND WEM TYPES

11.1 PL-450/KC TYPE

Model PL-450/KC type is the same as the PL-450/KU type with the exception of following sections.

MISCELLANEOUS PARTS

Mark	Symbol & Description	Part No.		Remarks
		KU type	KC type	
△	Power supply assembly PU cord assembly Packing case	XWR-047 PXH-345 PHH-123	XWR-048 PXH-333 PHH-134	

Parts List

Power Supply Assembly (XWR-048)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.
★ D1		PCX-010 (SIRBA10)

CAPACITORS

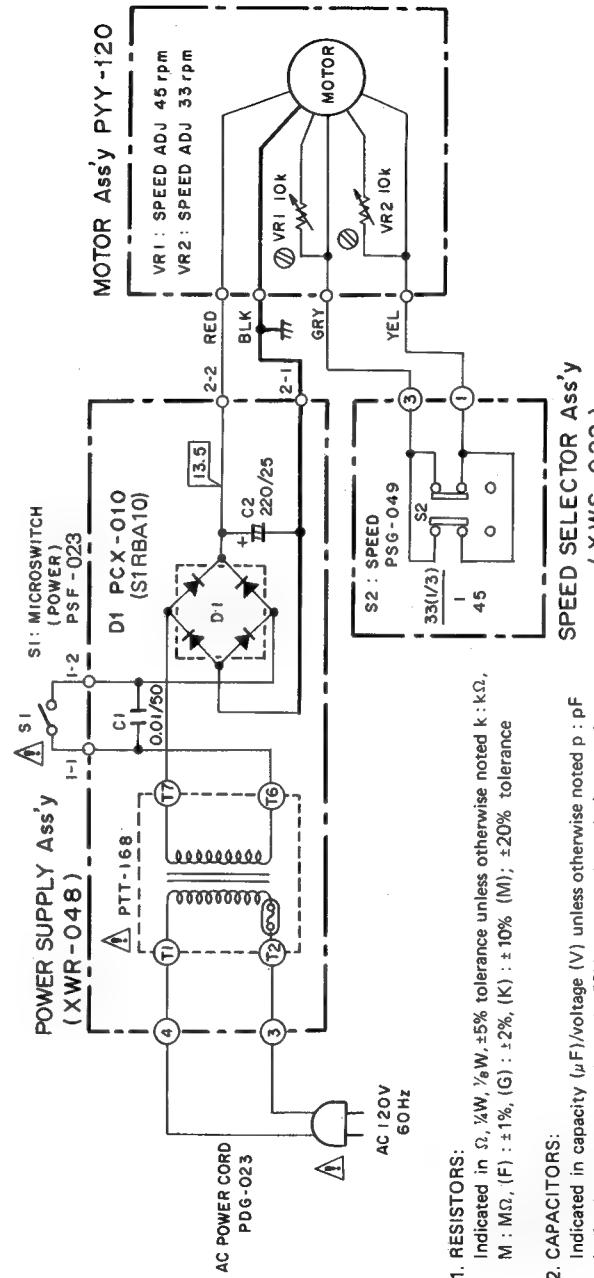
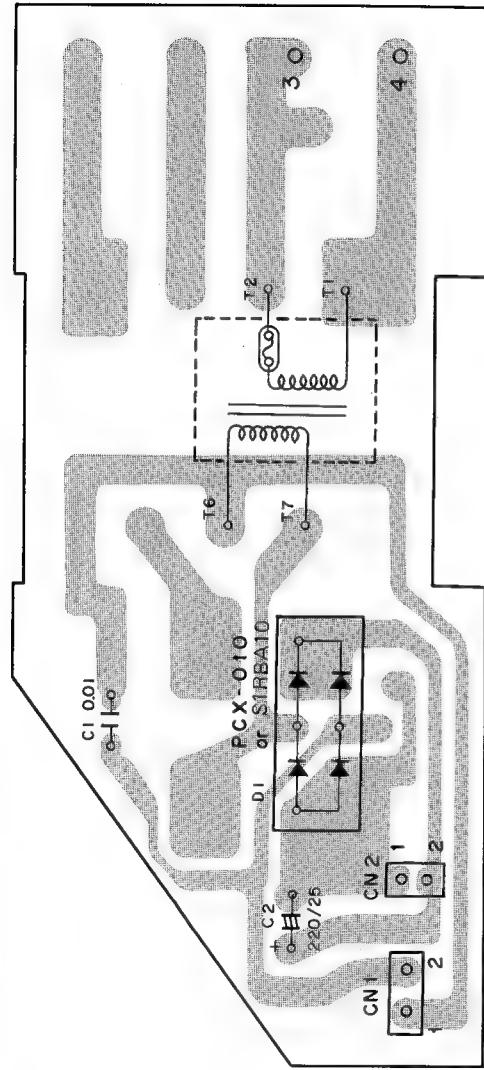
Mark	Symbol & Description	Part No.
C1 C2		CKDVF 103Z 50 CEA 221M 25L

TRANSFORMER

Mark	Symbol & Description	Part No.
△ ★	Power transformer (1120V)	PTT-168

Schematic Diagram and P. C. Board Pattern

POWER SUPPLY ASSEMBLY (XWR-048)



1. RESISTORS:
Indicated in Ω , $\%W$, $\%W$, $\pm 5\%$ tolerance unless otherwise noted $k \cdot k\Omega$,
 $M : M\Omega$, $(F) : \pm 1\%$, $(G) : \pm 2\%$, $(K) : \pm 10\%$ (M) ; $\pm 20\%$ tolerance

2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted $p : pF$
Indication without voltage is 50V except electrolytic capacitor.
AC 120V

3. VOLTAGE
DC voltage (V) at no input signal

4. OTHERS:

► : Signal route.

◎ : Adjusting point.

The \triangle mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

SWITCHES:

S1 : POWER ON - OFF
S2 : SPEED 33/3 rpm - 45 rpm

The underlined indicates the switch position.

11.2 PL-450/R, WEM AND WB TYPES

Model PL-450/R, WEM and WB types are the same as the PL-450/KU type with the exception of following sections.

MISCELLANEOUS PARTS

<u>Mark</u>	<u>Symbol & Description</u>	<u>KU type</u>	<u>R type</u>	<u>WEM type</u>	<u>WB type</u>	<u>Remarks</u>
△	Power supply assembly	XWR-047	XWR-046	XWR-044	XWR-044	
△	AC power cord	PDG-023	PDG-028	PDG-037	...	
△	AC power cord assembly	...	...	PXB-333	PDF-212	
△	PU card assembly	PXB-345	PXB-333	PXB-333	PXB-333	
△ ★	Line voltage selector	...	PSB-011	...	...
	Screw 3 x 10 (For line voltage selector)	....	IPZ30P100FMC	....	....
	Panel	PNY-151	PNY-152	PNY-151	PNY-151	
	Operating instructions (English)	PRB-256	PRB-256	PRB-256	PRB-256	
	Operating instructions (Spanish)	....	PRC-008	....	...
	Operating instructions (English/German/French/Italian)	....	....	PRE-023	....
	Packing case	PHH-123	PHH-122	PHH-122	PHH-122	

Parts List

For R type Power Supply Assembly (XWR-046)

SEMICONDUCTORS

<u>Mark</u>	<u>Symbol & Description</u>	<u>Part No.</u>	<u>Mark</u>	<u>Symbol & Description</u>	<u>Part No.</u>
★ D1		PCX-010 (S1RBA10)	★ D1		PCX-010 (S1RBA10)

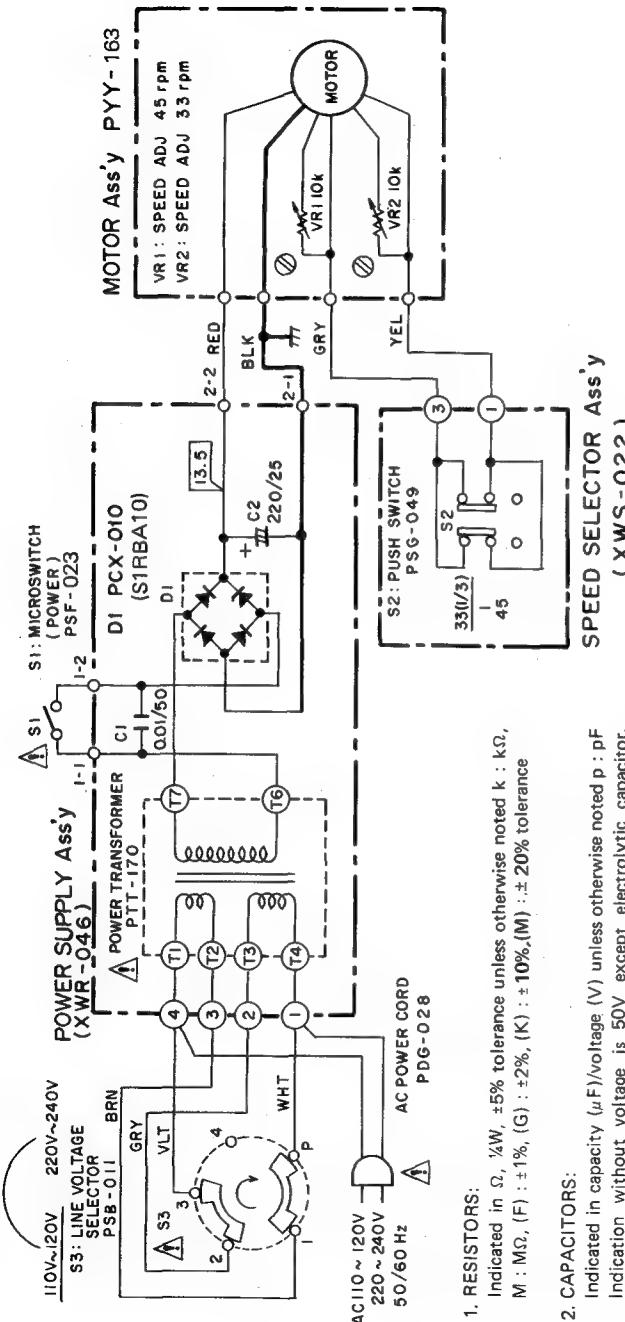
CAPACITORS

<u>Mark</u>	<u>Symbol & Description</u>	<u>Part No.</u>	<u>Mark</u>	<u>Symbol & Description</u>	<u>Part No.</u>
C1		CKDYF 103Z 50	C1		CKDYF 103Z 50
C2		CEA 221M 25L	C2		CEA 221M 25L

OTHERS

<u>Mark</u>	<u>Symbol & Description</u>	<u>Part No.</u>	<u>Mark</u>	<u>Symbol & Description</u>	<u>Part No.</u>
△ ★	Power transformer (110V ~ 120V, 220V ~ 240V)	PTT-170	△ ★	Power transformer (220V ~ 240V)	PTT-169

Schematic Diagram FOR PL-450/R TYPE



1. RESISTORS:

Indicated in Ω , $\frac{1}{2}W$, $\pm 5\%$ tolerance unless otherwise noted $k : k\Omega$,
 $M : M\Omega$, $(F) : \pm 1\%$, $(G) : \pm 2\%$, $(K) : \pm 10\%$, $(M) : \pm 20\%$ tolerance

2. CAPACITORS:

Indicated in capacity (μF)/voltage ('V) unless otherwise noted $p : pF$
 Indication without voltage is $50V$ except electrolytic capacitor.

3. VOLTAGE

: DC voltage ('V) at no input signal

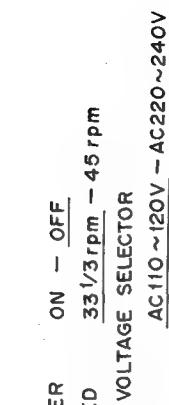
4. OTHERS:

: Signal route.

: Adjusting point.

The mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.



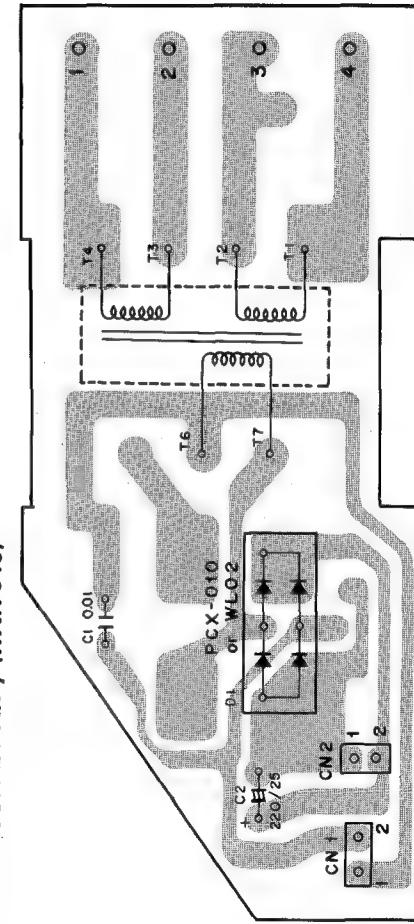
SPEED SELECTOR Ass'y
(XWS-022)

SWITCHES:

- S1 : POWER ON — OFF
- S2 : SPEED 33/1/3 rpm — 45 rpm
- S3 : LINE VOLTAGE SELECTOR
AC 110 ~ 120V — AC 220 ~ 240V

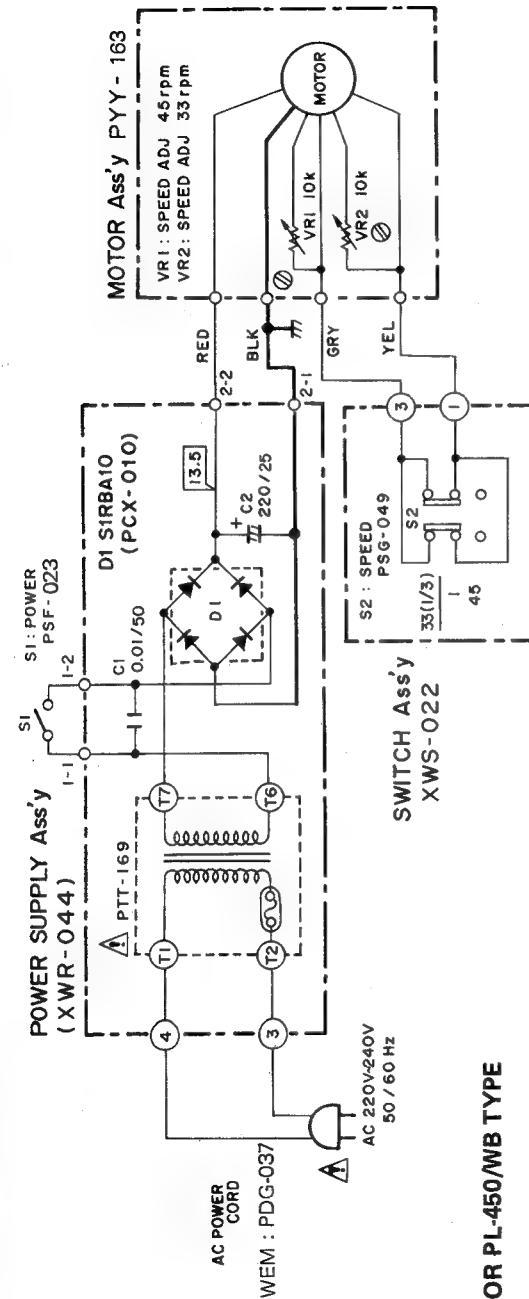
The underlined indicates the switch position.

POWER SUPPLY Ass'y (WXR-046)

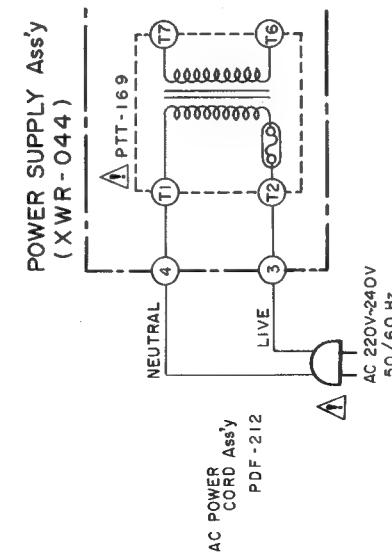


P.C. Board Pattern

**Schematic Diagram
FOR PL-450/WEM TYPE**



FOR PL-450/WB TYPE



**POWER SUPPLY Ass'y
(XWR-044)**

VR1 : SPEED ADJ 4.5 rpm
VR2 : SPEED ADJ 3.3 rpm

AC POWER CORD Ass'y
PDF-212
AC 220V~240V
50 / 60 Hz

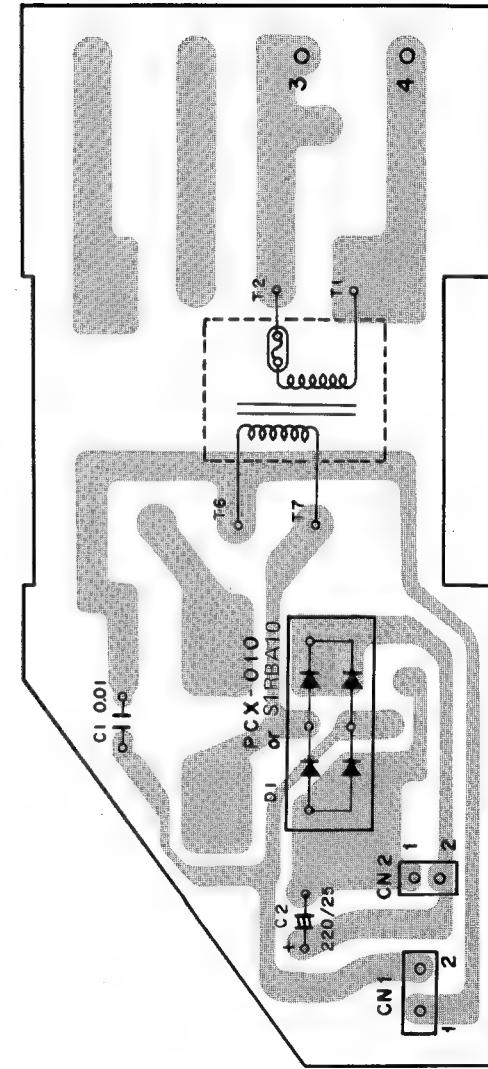
**POWER SUPPLY Ass'y
(XWR-044)**

VR1 : SPEED ADJ 4.5 rpm
VR2 : SPEED ADJ 3.3 rpm

AC POWER CORD Ass'y
PDF-212
AC 220V~240V
50 / 60 Hz

The underlined indicates the switch position.

**P. C. Board Pattern
Power Supply Assembly (XWR-044)**



12. FOR PL-405/R, WB, KU AND KC TYPES

12.1 PL-405/R AND WB TYPES

Model PL-405/R, WB types are the same as the PL-450/KU type with the exception of following sections.

MISCELLANEOUS PARTS

<u>Mark</u>	<u>Symbol & Description</u>	<u>PL-450/KU type</u>	<u>PL-405/R type</u>	<u>PL-405/WB type</u>	<u>Remarks</u>
△	Panel SP button unit	PNY-151	PNY-154	PNY-153	
△	Power supply assembly	PAD-147	PAD-148	PAD-148	
△	AC power cord	XWR-047	XWR-046	XWR-044	
△	AC power cord assembly	PDG-023	PDG-028	....
△	PU cord assembly	....	....	PDF-212	
△ ★ *	PU rest assembly	PXB-345	PXB-333	PXB-333	
△	Line voltage selector	PXB-373	PXB-396	PXB-396	
△	Screw 3 x 10 (For line voltage selector)	....	PSB-011	....
△	Packing case	IPZ30P100FMC	....	....
△	Operating instructions (spanish)	PHH-123	PHH-124	PHH-124	
△		....	PRC-008	....

Parts List

For R type Power Supply Assembly (XWR-046)

SEMICONDUCTORS

<u>Mark</u>	<u>Symbol & Description</u>	<u>Part No.</u>	<u>Mark</u>	<u>Symbol & Description</u>	<u>Part No.</u>
★ D1		PCX-010 (S1RBA10)	★ D1		PCX-010 (S1RBA10)

CAPACITORS

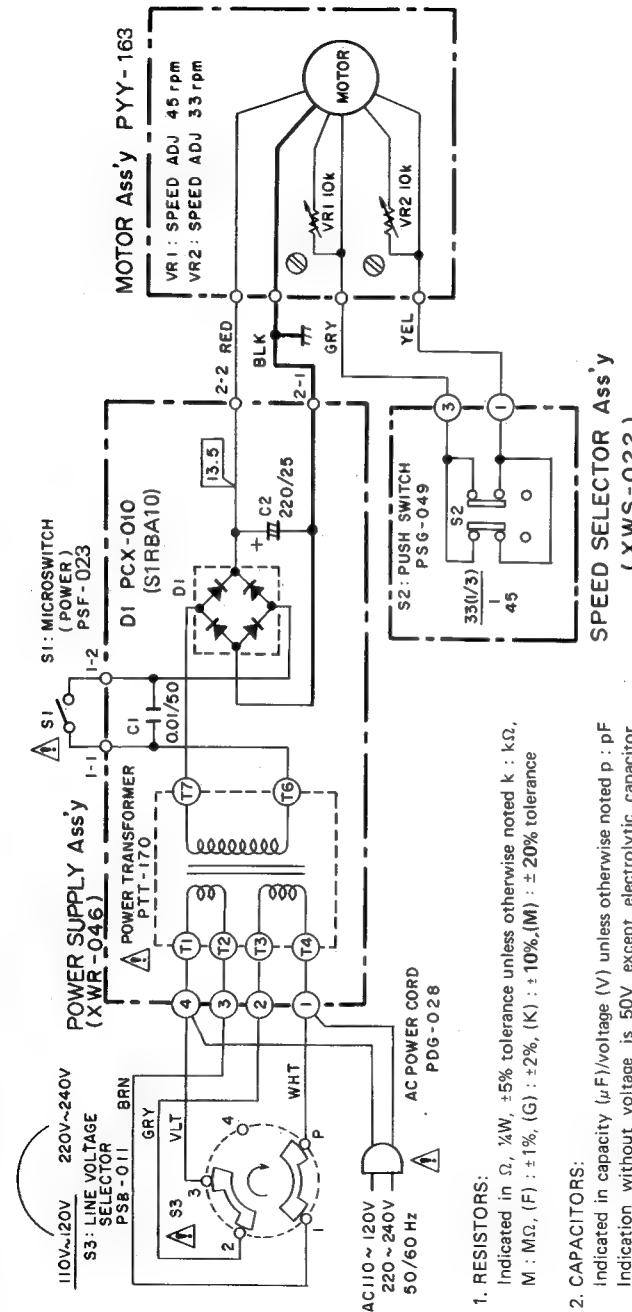
<u>Mark</u>	<u>Symbol & Description</u>	<u>Part No.</u>	<u>Mark</u>	<u>Symbol & Description</u>	<u>Part No.</u>
C1 C2		CKDYF 103Z 50 CEA 221M 25L	C1 C2		CKDYF 103Z 50 CEA 221M 25L

OTHERS

<u>Mark</u>	<u>Symbol & Description</u>	<u>Part No.</u>	<u>Mark</u>	<u>Symbol & Description</u>	<u>Part No.</u>
△ ★	Power transformer (110V ~ 120V, 220V ~ 240V)	PTT-170	△	★ Power transformer (220V ~ 240V)	PTT-169

Schematic Diagram and P.C. Board Pattern (For PL-405/R type)

**Schematic Diagram
FOR PL-450/R TYPE**



1. RESISTORS:
Indicated in Ω , $\frac{1}{2}W$, $\pm 5\%$ tolerance unless otherwise noted $k : k\Omega$,
 $M : M\Omega$, $(F) : \pm 1\%$, $(G) : \pm 2\%$, $(K) : \pm 10\%$, $(M) : \pm 20\%$ tolerance

2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted $p : pF$
Indication without voltage is $50V$ except electrolytic capacitor.

3. VOLTAGE
□ : DC voltage (V) at no input signal

4. OTHERS:

→ : Signal route.

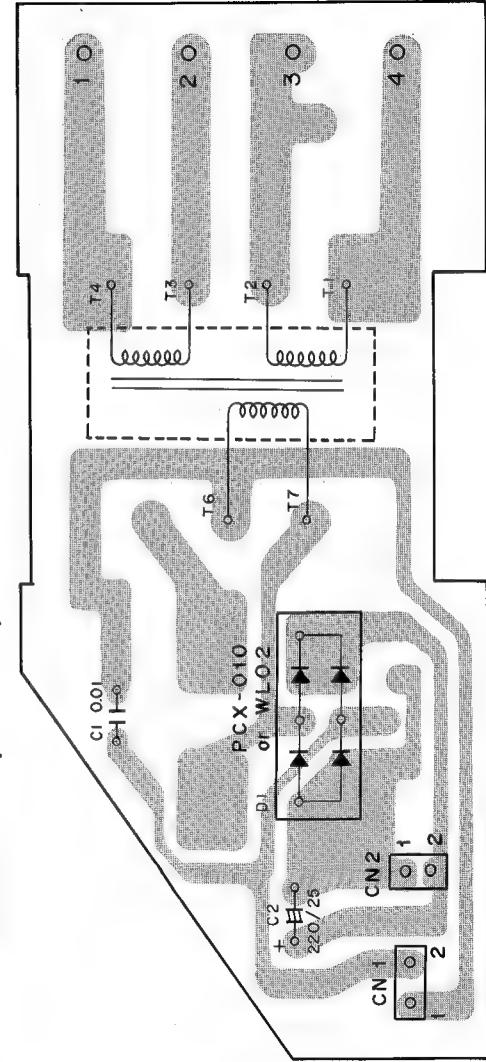
◎ : Adjusting point.

The \triangle mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

P.C. Board Pattern

POWER SUPPLY Ass'y (WXR-046)



The underlined indicates the switch position.

S1 : LINE VOLTAGE SELECTOR PSB-011

S2 : SPEED SELECTOR ASS'Y (XWS-022)

S3 : POWER SWITCH PSG-049

D1 : POWER TRANSFORMER PTT-170

C1 : 0.01 μF

C2 : 220/25 μF

T1-T4 : DIODES

T5-T7 : TRANSISTORS

IC1 : PCX-010

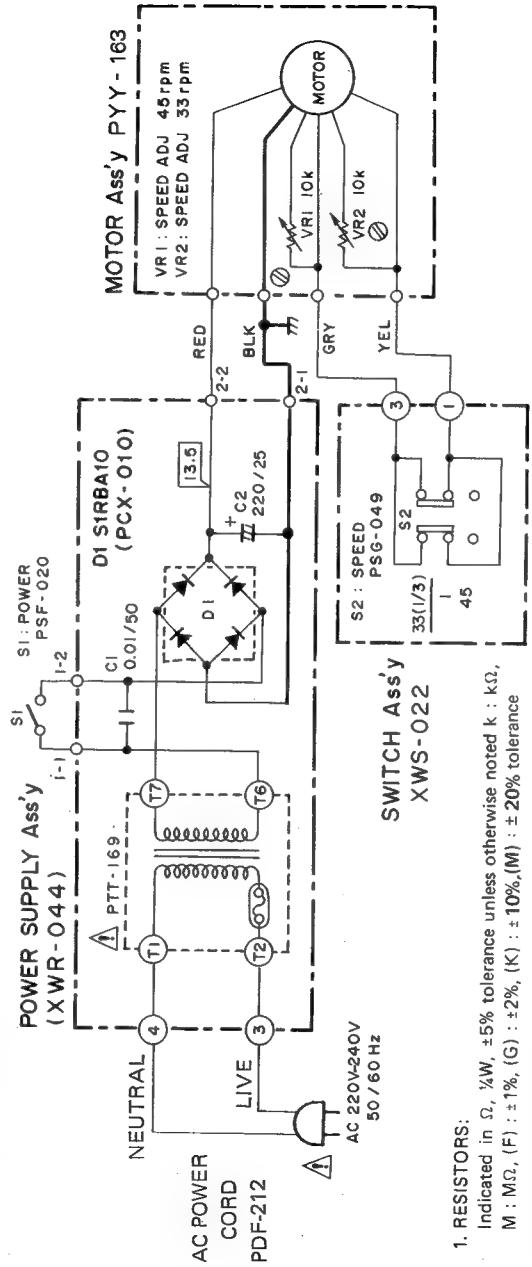
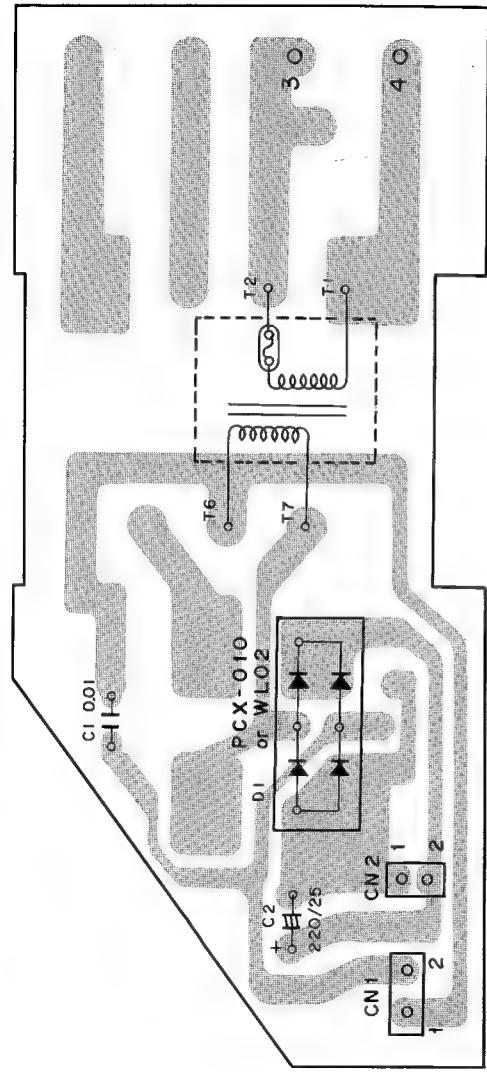
CN1 : CONNECTOR

CN2 : CONNECTOR

T6-T7 : TRANSISTORS

Schematic Diagram and P. C. Board Pattern (For PL-405/WB type)

POWER SUPPLY ASSEMBLY (XWR-044)



1. RESISTORS:
Indicated in Ω , $\frac{1}{4}W$, $\pm 5\%$ tolerance unless otherwise noted $p : \mu F$,
 $M : M\Omega$, $(F) : \pm 1\%$, $(G) : \pm 2\%$, $(K) : \pm 10\%$, $(M) : \pm 20\%$ tolerance

2. CAPACITORS:
Indicated in capacity (μF)/voltage (V) unless otherwise noted $p : \mu F$
Indication without voltage is 50V except electrolytic capacitor.

3. VOLTAGE

: DC voltage (V)

4. OTHERS:

: Adjusting point.

The mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.

This is the basic schematic diagram, but the actual circuit may vary due to improvements in design.

SWITCHES:

S 1 : POWER	ON — OFF
S 2 : SPEED	<u>33 1/3 rpm</u> — 45 rpm

The underlined indicates the switch position.

12.2 PL-405/KU AND KC TYPES

Model PL-405/KU,KC types are the same as the PL-450/KU type with the exception of following sections.

MISCELLANEOUS PARTS

Mark	Symbol & Description	PL-450/KU type		PL-405/KU type		PL-405/KC type	Remarks
		Part No.	Part No.	Part No.	Part No.		
Panel	PNY-151	PNY-153	PNY-163	PAD-148	PAD-148	XWR-047	
SP button unit	PAD-147	XWR-047	XWR-048	PXB-345	PXB-333	PXB-345	
Power supply assembly	XWR-047	PXB-345	PXB-333	PHH-123	PHH-135	PHH-125	
PU cord assembly	PXB-345	PHH-123	PHH-135	PXB-373	PXB-396	PXB-373	
Packing case							
Arm rest assembly							

Parts List

For KU type

Power Supply Assembly (XWR-047)

SEMICONDUCTORS

Mark	Symbol & Description	Part No.		Mark		Part No.	
		PCX-010 (S1RBA10)	D1	★ D1	★ D1	PCX-010 (S1RBA10)	PCX-010 (S1RBA10)

CAPACITORS

Mark	Symbol & Description	Part No.		Mark		Part No.	
		CKDYF 103Z 50	CEA 221M 25L	C1	C2	CKDYF 103Z 50	CEA 221M 25L

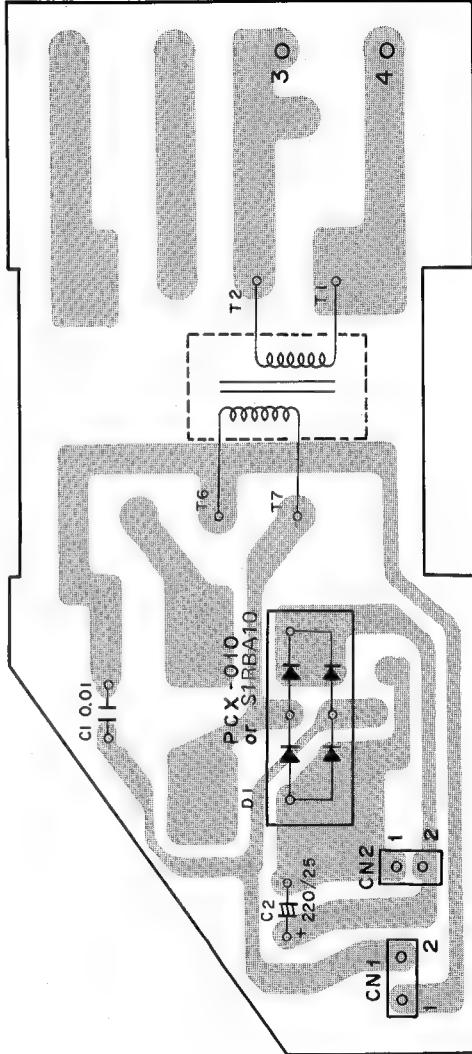
OTHERS

Mark	Symbol & Description	Part No.		Mark		Part No.	
		PTT-167	PTT-167	△ ★	Power transformer (120V)	PTT-168	PTT-168

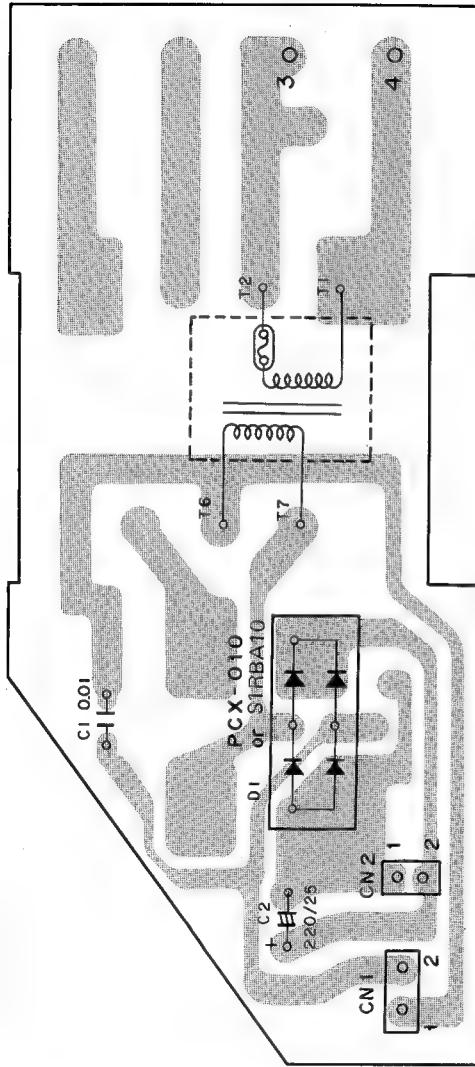
Schematic Diagram and P. C. Board Patterns

For KU type

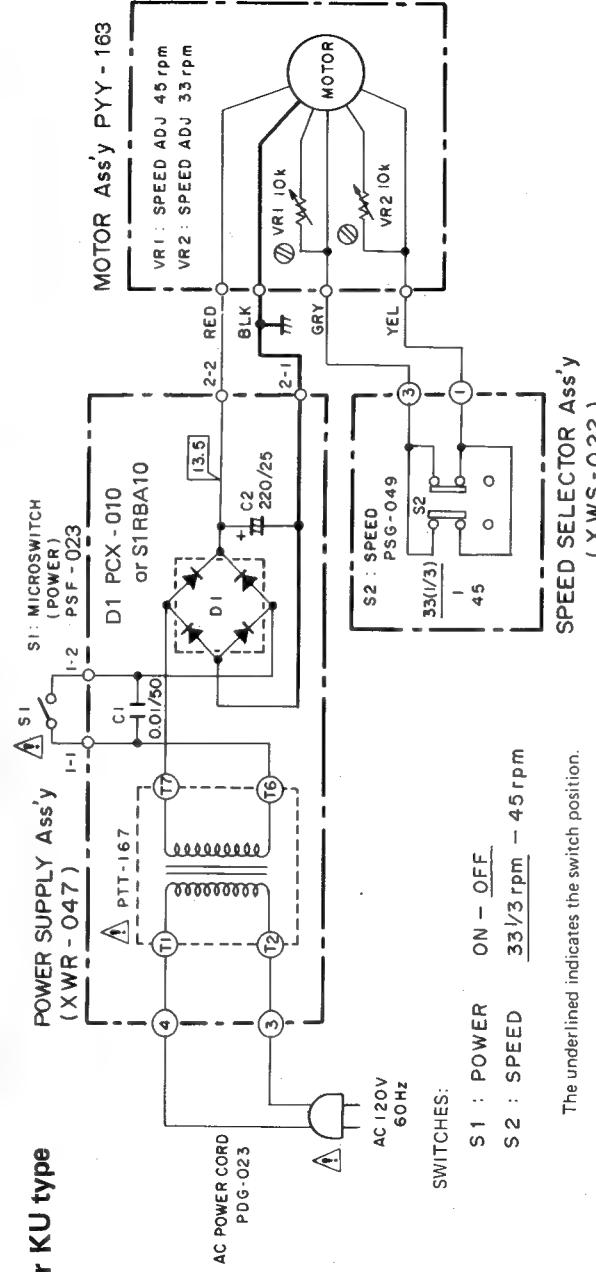
POWER SUPPLY ASSEMBLY (XWR-047)



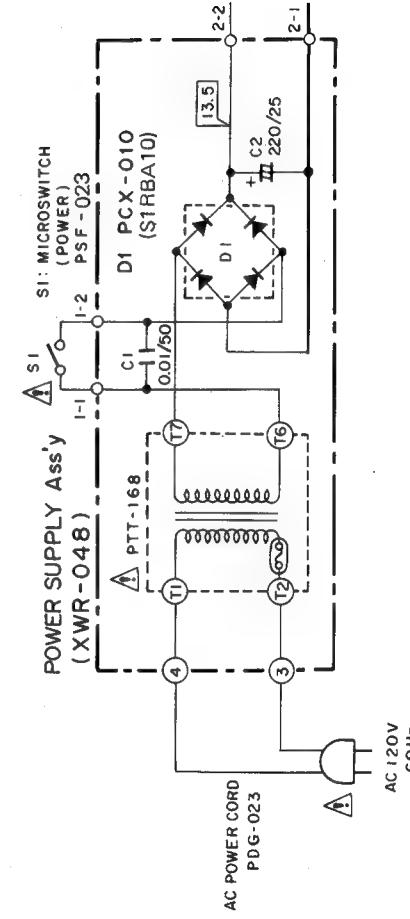
**For KC type
POWER SUPPLY ASSEMBLY (XWR-048)**



For KU type



For KC type



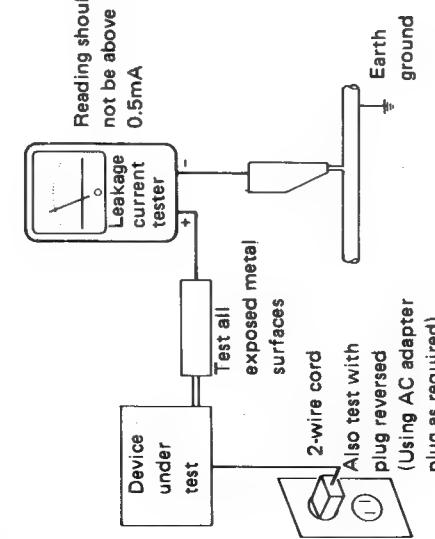
13. SAFETY INFORMATION

1. SAFETY PRECAUTIONS

The following check should be performed for the continued protection of the customer and service technical.

LEAKAGE CURRENT CHECK

Measure leakage current to a known earth ground (water pipe, conduit, etc.) by connecting a leakage current tester such as Simpson Model 229-2 or equivalent between the earth ground and all exposed metal parts of the appliance (input/output terminals, screwheads, metal overlays, control shaft, etc.). Plug the AC line cord of the appliance directly into a 120V AC 60Hz outlet and turn the AC power switch on. Any current measured must not exceed 0.5mA.



AC Leakage Test

ANY MEASUREMENTS NOT WITHIN THE LIMITS OUTLINED ABOVE ARE INDICATIVE OF A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED BEFORE RETURNING THE APPLIANCE TO THE CUSTOMER.

2. PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in the appliance have special safety related characteristics. These are often not evident from visual inspection nor the protection afforded by them necessarily can be obtained by using replacement components rated for voltage, wattage, etc. Replacement parts which have these special safety characteristics are identified in this Service Manual.

Electrical components having such features are identified by marking with a \triangle on the schematics and on the parts list in this Service Manual.

The use of a substitute replacement component which does not have the same safety characteristics as the PIONEER recommended replacement one, shown in the parts list in this Service Manual, may create shock, fire, or other hazards.

Product Safety is continuously under review and new instructions are issued from time to time. For the latest information, always consult the current PIONEER Service Manual. A subscription to, or additional copies of, PIONEER Service Manual may be obtained at a nominal charge from PIONEER.

QUESTIONNAIRE**MODEL**

One Model per questionnaire

Dear Servicer,

Thank you for your cooperation in the post-sale service of Pioneer products.

This questionnaire is used as a tool to improve the serviceability of our products and service manuals.
Please evaluate this model and service manual by answering the following questions. Your ideas may be realized in our future products. Your answers will be appreciated. Thank you.

PIONEER ELECTRONIC CORP.**T. Nakagawa, Manager, Service Section, International Division**

1. SERVICING EVALUATION		Circle applicable number:	Good	Fair	Poor
a. Disassembly/Re-assembly:		1	2	3	*4 *5
b. Circuit Checks:		1	2	3	*4 *5
c. Replacement of Parts:		1	2	3	*4 *5
d. Adjustment (s):		1	2	3	*4 *5

*** If (4) or (5) was circled, please be specific.**

e. Your advice, opinion or ideas related to servicing this product.

2. SERVICE MANUAL EVALUATION

a. Circuit & Mechanism Description

b. Circuit Diagram

3. OTHER

Please describe other areas of servicing which you may find difficult.

Completed by :

Company Name :

Address :

City/State/Zip :

Date :

Please send this form filled to the distributor in your country.

ENCUESTA

Modelo _____

Uno modelo por encuesta

Querido señor,

Muchas gracias por su cooperación en el servicio de post-venta de los productos de Pioneer. Esto es para mejorar el servicio de post-venta de nuestros productos. Les pedimos a ustedes responder a las preguntas siguientes. Su opinión e idea estarán tenido en cuenta en los productos futuros.

Nos complacemos en saludarles muy atentamente,

PIONEER ELECTRONIC CORPORATION

T. Nakagawa, Manager, Service Section, Administration Department, International Division

1. EVALUACION EN LA FACILIDAD DE SERVICIO

MODELO

a. Desmonte:

Marque uno entre los numeros siguientes.

Bueno

Medio

Malo

1	2	3	*4	*5
---	---	---	----	----

b. Examen de circuito:

1	2	3	*4	*5
---	---	---	----	----

c. Reemplazo de piezas:

1	2	3	*4	*5
---	---	---	----	----

d. Ajuste:

1	2	3	*4	*5
---	---	---	----	----

* Si marca (4) o (5), ejemplifíquelo concretamente.

e. Su consejo, opinión u idea en el servicio de este modelo.

2. EVALUACION DEL MANUAL DE SERVICIO

a. Circuito & Descripción de mecanismos.

b. Diagrama del circuito.

3. OTRAS

Describe otras partes difíciles de reparar.

Respondido por :

Nombre :

Compañía :

Dirección :

Fecha :

Edad :

Manda esta encuesta al domicilio del distribuidor, por favor.

QUESTIONNAIREModèle _____
Un modèle par questionnaire

Cher Monsieur,

Merci pour votre coopération à propos du service après-vente des produits PIONEER.

Ce questionnaire a pour but l'amélioration de notre service d'entretien et des manuels de nos produits. Nous vous prions d'évaluer dans ce questionnaire les éléments de nos manuels de service. Vos conseils seront précieux et pris en considération dans la réalisation de nos produits dans l'avenir. En vous remerciant d'avance, agréez, cher monsieur, l'expression de nos sentiments distingués.

PIONEER ELECTRONIC CORPORATION

T. Nakagawa, Manager, Service Section, Administration Department, International Division

**1. ÉVALUATION EN FACILITÉ DE SERVICE
MODÈLE**

a. Démontage/remontage

Cerclez le numéro. Bon, Passable, Mauvais,				
	1	2	3	*4 *5

b. Examen de circuits

	1	2	3	*4 *5

c. Rechange de pièces

	1	2	3	*4 *5

d. Facilité de réglage

	1	2	3	*4 *5

* Si vous cerclez No. 4 ou 5, donnez l'explication concrète.

e. Votre conseil ou avis sur le service

2. VOTRE APPRÉCIATION DU MANUEL DE SERVICE

a. Circuit et description du mécanisme.

b. Diagramme du circuit.

3. AUTRES

Anotez les autres points difficiles à réparer.

Répondu par :

Nom :

Compagnie :

Adresse :

Date :

Âge :

Adressez-vous ce questionnaire au distributeur, S.V.P.